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COLLEGE PARK, MD.

# COMBINED CATALOG


Volume One

College Park

University of Maryland

1960-1961





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# COMBINED CATALOG

Series 1960-1961

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Volume One

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COLLEGE PARK  
UNIVERSITY OF MARYLAND

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*The 1960-1961 Series of University of Maryland Catalogs is published in a two-volume set of combined catalogs. Volume One contains catalogs pertaining to academic units located on the College Park Campus. Volume Two contains catalogs pertaining to academic units located on the Baltimore Campus. This is Volume One.*

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Catalogs in this volume are located  
in this order:

*Adventure in Learning*  
*(General Information)*  
*College of Agriculture*  
*College of Arts and Sciences*  
*College of Business*  
*and Public Administration*  
*College of Education*  
*College of Engineering*  
*College of Home Economics*  
*College of Physical Education,*  
*Recreation and Health*  
*Department of Air Science*  
*Graduate School Announcements*  
*Summer School*  
*University College*



### *IMPORTANT NOTICE*

THE STATEMENTS IN THIS BOOKLET ARE FOR INFORMATION ONLY. The provisions of this publication *do not* form a contract between the student and the University of Maryland.

Official notice concerning student life, grading systems and other regulations are to be found in the publication *General and Academic Regulations*, made available to all incoming students.

The University reserves the right to change any provision or requirement at any time within the student's term of residence. The University further reserves the right at any time, to ask a student to withdraw when it considers such action to be in the best interests of the University.

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THIS PUBLICATION EXPLAINS HOW YOU MAY TAKE ADVANTAGE OF the opportunity for a quality education at moderate cost through the programs and facilities of your State University.

The key to your future lies in your own hands. The University of Maryland exists to help you to develop your particular talents and capabilities to the maximum degree.

At College Park and at Baltimore, the faculties and staff serve the citizens of the State through eight undergraduate colleges, a graduate school, and five professional schools.

We welcome your inspection of our program and urge you to visit the campus when you have an opportunity.

*Wilson H. Elkins*

DR. WILSON H. ELKINS  
*President of the University*



## To the Applicant for Admission

**THIS BOOKLET IS THE ALL-PURPOSE, GENERAL INFORMATION BOOKLET OF THE University.**

It contains the information you need

- ▶ to arrange your high school curriculum for acceptance by the various colleges of the University
- ▶ to select a course of study at the University
- ▶ to apply for admission
- ▶ to matriculate

*Adventure in Learning* also covers fees and expenses, housing, scholarships and loans.

The course catalog of the College of your choice will be made available to you after you enter the University.

OR

You may consult reference copies in your high school library, principal's office or office of the guidance counselor. Course catalogs usually require interpretation for new freshman students and should, therefore, be used in consultation with the high school guidance counselor or principal.

Professional school catalogs are available by writing to the office of the appropriate dean on the Baltimore campus.

Prospective part-time and evening adult education students may obtain the appropriate course catalog or brochure by writing to the Director, University College (formerly College of Special and Continuation Studies), Skinner Building, University of Maryland at College Park.

Prospective graduate students may obtain the Graduate Catalog by writing directly to the Dean of the Graduate School, Skinner Building.

Prospective summer students may write to the Director of the Summer Session for copies of the Summer Session bulletin—usually available after April 15.



# The University Heritage

FEW INSTITUTIONS OF HIGHER LEARNING IN THE UNITED STATES HAVE HAD as rich and proud a history as the University of Maryland. Students admitted will find the institution stressing programs of educational excellence, vital research, and important service to the community.

Just 31 years after the signing of the Declaration of Independence, there was established in Baltimore a College of Medicine, the fifth such medical school in the United States. The College began with no visible assets save determination, enthusiasm and skill, and the first seven students enrolled received their lectures in the homes of their professors. One member of the faculty, Dr. John Shaw, died as a result of exposure suffered while working winter nights in a delapidated structure that was the college's home in 1808. The other two members of the faculty, Dr. John Beal Davidge and Dr. James Cocke, were extremely skillful researchers—professionally outstanding in that day and even more so from the perspective of today.

Under an 1812 act of the State Legislature, the College of Medicine of Maryland was authorized to appoint and annex to itself three other colleges and faculties: the Faculty of Divinity, the Faculty of Law, and the Faculty of Arts and Sciences. These four colleges became known as the University of Maryland. In the ensuing years, the departments of Dentistry and Pharmacy as well as the Training School for Nurses were created under the College of Medicine. Still, in 1907, on the University's one hundredth birthday, no affiliated College of Arts and Sciences had been established.

Meanwhile, on the old Ross Borough Estate, south of Baltimore near Washington, D. C., another institution, the Maryland Agricultural College, was developing.

AS THE RESULT OF INTEREST GENERATED BY A GROUP OF FAR-SIGHTED Maryland farmers, "an act to establish and endow an agricultural college" had been passed by the State Legislature in 1856, creating the second such institution established in the Western Hemisphere. In 1862 the College became a land-grant institution under an act of the United States Congress. In 1920, by an act of the State Legislature, the University of Maryland (Baltimore) was merged with the Maryland State College of Agriculture (College Park) and the combined institutions were given the name University of Maryland.

This, of course, forms only the briefest outline of the 150-year history of the University.

Although the University is a State institution quite large in physical plant, student enrollment, the number of courses and degrees offered, and services performed, its objectives remain constant and form a base for all educational activity. Simply stated they are: (1) to prepare students in the arts, the humanities, the pure and applied sciences, agriculture, business and public administration, home economics, industry, and for the professions; (2) to contribute to the civic, ethical, moral, cultural, spiritual, and general welfare; (3) to provide general education in its broadest sense, both formal and informal, for all students who enroll; (4) to develop those ideals and finer relationships among students which characterize cultured individuals; (5) to conduct systematic research and to promote creative scholarship; and (6) to offer special, continuation, and extension education in communities where it is feasible.



The government of the University is vested in a Board of Regents, each member of which is appointed by the Governor of the State to serve a term of nine years. The administration of the University is vested in the President. The following is a listing of the major administrative divisions on both campuses:

#### AT COLLEGE PARK

College of Agriculture	University College (formerly College of Special and Continuation Studies)
College of Arts and Sciences	Graduate School
College of Business and Public Administration	Summer School
College of Education	Agricultural Experiment Station
College of Engineering, the Glenn L. Martin Institute of Technology	Agricultural and Home Economics Extension Service
College of Home Economics	Agricultural Services and Controls
Department of Air Science	
College of Physical Education, Recreation and Health	

#### AT BALTIMORE

School of Dentistry	School of Nursing
School of Law	School of Pharmacy
School of Medicine	University Hospital

## You are the Vital Factor

WHERE DO YOU FIT IN? YOU ARE THE BASIC, VITAL FACTOR IN THE UNIVERSITY'S educational program. It is with you in mind that the citizens of this State (your parents) contribute toward the establishment of a well-equipped University. Much has been done to provide the means for you to acquire an excellent education. You will have an opportunity to fulfill this obligation by diligent application in your studies.

If you are a high school student, or graduate, you are trying, certainly, to decide (1) whether or not to spend the next four years of your life at a college or university and (2) which institution and which course of study is the right one for you.

First you should know that the administration and faculty of the University of Maryland will make every attempt to help you find the answers to these questions. Through personal counseling, letters, and transmittal of information dealing with the academic program, the University attempts to present to the prospective student as complete a picture of its activities as possible. The University is willing to go all the way for you, both during your period of decision and (if accepted for admission) during your academic tenure. Now, here is what the University expects of you.

The University expects you to be a good student; it expects you to be a conscientious student. Even though the University is concerned with a large number of students, emphasis remains on the individual. An estimate of the

value of the individual at the University was given recently by the President of the University, Dr. Wilson H. Elkins, in an address entitled "A Quantity of Quality."

*During the last few decades we have been witnessing a social revolution with the individual as the center, and it is extremely important that this revolution have a clear objective. Otherwise, it could very easily result in a widespread conviction that every one should share and share alike, the benefits of a free society regardless of the capacity, effort, initiative, and ambition. Among other things this would lead to the weakening of higher education by the admission and retention of all comers to the campuses of the colleges and universities, and the reduction of our program to a low common denominator. This would be a disservice to society. We must therefore strive to direct the revolution toward the recognition of individual differences while assuring each individual of the opportunity to go as far along various courses as his talents and energies will permit.*

What Dr. Elkins has said is that there are wide and impressively deep educational opportunities offered to each individual at the University of Maryland, but it is up to each individual to prove his own worth and to develop his talents according to his own special capabilities. The University makes every attempt to maintain small, intimate classes and the teaching staff makes every attempt to provide individual guidance and instruction for each student.

WHEN YOU VISIT THE CAMPUS AT COLLEGE PARK OR IN BALTIMORE, YOU WILL see a number of newly-completed buildings and several under construction. Among the major buildings planned or under construction at College Park are a new building for the College of Business and Public Administration and a Physical Sciences Lecture Hall. Among the major buildings completed in the last several years are the new Journalism Building and the new Main Library. The latter building provides one of the finest library facilities of its kind on any state university campus in the nation. It is located in the geographical center of the University, on the Mall, and has become the center of campus intellectual activity. Its four floors and seven levels contain these main study centers: Fine Arts, Maryland Room and Rare Books, Special Collections, Technology and Science, Social Science, Humanities, Browsing Room, General Reference, Study Room and Reserve Book Room. Ultimately, the Library will house some 1,000,000 volumes. It accommodates 2,000 readers. Other libraries are located in the various educational branches. Notable among these are the modern libraries located in the College of Engineering and the Department of Chemistry at College Park, and in the Psychiatric Institute in Baltimore. Professional students will have the advantage of a new modern Medical Sciences Library, to be completed in 1959 on the Baltimore campus.

The University has at its disposal some 2,500 acres of land. The main campus at College Park encompasses about 300 acres with 800 additional acres adjacent to it available for agricultural research and teaching. At College Park there are seventy-five principal buildings all designed in a Georgian colonial style. On the Baltimore campus, located in the vicinity of Lombard and Greene Streets, are situated a number of buildings including the original School of Medicine building constructed in 1812, the Out-Patient Department, the University

Hospital, the Psychiatric Institute, the Frank C. Bressler Building, the Dental School Building, Pharmacy School and Nursing School, the School of Law Building, the Gray Laboratory and others.

New and recent construction in Baltimore includes a building for the School of Pharmacy, the School of Nursing, a Union-Dormitory Building, and the modernization of existing facilities in the Schools of Dentistry and Medicine.

In summary, the University offers:

- ▶ *a large, modern physical plant;*
- ▶ *extensive educational and research facilities;*
- ▶ *accommodations for a large student body;*
- ▶ *a spirit of inquiry and helpfulness which aims at the individual rather than at the class;*
- ▶ *and a rich, colorful, and proud heritage.*

## Admission to the University

NOW YOU WILL WANT TO ASK THIS QUESTION: WHO MAY BE ADMITTED TO the University?

The University says officially: "Admission from secondary school is based upon evidence indicating the applicant's probable success in the program of his choice."

By the word "evidence" the University means that:

- 1) You must be a graduate of an accredited secondary school;
- 2) Your principal or headmaster should recommend you for entrance to the University;
- 3) Your high school program should have provided you with the subjects required for the college and curriculum which you wish to enter.

Actually, during your high school years, you have been preparing for the University. You should have maintained a good scholastic record and planned your curriculum so that you will have at graduation the required number of units to begin your university program.

A graduate of an accredited secondary school in Maryland whose secondary record indicates probable success in the University will be admitted without examination, provided that his program has included the subjects required for the college and curriculum which he wishes to enter, and provided that he has a satisfactory general recommendation from his secondary school as to his character and ability.

A graduate of an accredited secondary school of Maryland whose secondary school preparation has not included the subjects necessary for the college and curriculum which he wishes to enter or whose academic performance has not been consistently satisfactory may be asked to take examinations to supplement his secondary school record.

Examinations are given at College Park at stated intervals during the year. On the basis of the applicant's secondary school record and his performance

on the examination, he may be given a regular admission or he may be admitted on a trial status.

The student who is admitted on a trial status receives special counseling and guidance for which a special fee is charged. He is required to take a limited program until he has demonstrated that he can do satisfactory work at the college level. He is not eligible for re-instatement if his college performance during his first semester is unsatisfactory.

### *General Requirements*

In general, your subject requirements for entrance total 16 high school units. The University requires that 7 of these 16 units be in college preparatory subjects as follows: English, 4 units; Mathematics (preferably algebra), one unit; history or social sciences, one unit; biological or physical sciences, one unit. Of course, your remaining nine units should be selected to give you as strong preparation as possible for work at the University. You should most certainly consult the sections titled, "Recommended Preparation in High School," found under each College heading beginning on page 16.

### *How about Mathematics?*

Most programs in the University require some college work in mathematics. The student who plans to go to college should be sure to take College Preparatory Mathematics for two, three or four years. Some programs in the University, for example Engineering, require from three and one-half to four years of College Preparatory Mathematics.

*Courses in General Mathematics, Commercial Mathematics, and Shop Mathematics are not considered as College Preparatory Mathematics.*

A four-year program in College Preparatory Mathematics will include Algebra (usually two years), Plane Geometry (usually one year), and Trigonometry. Analytical Geometry, Solid Geometry, and introduction to the Calculus are desirable if available.

### *How about English?*

A considerable portion of the work in English during the freshman year at the University is devoted to expository writing. The high school student should therefore get as much preparation as possible in composition. The student who passes the English Classification test in the top fifteen percent of his entering class will be placed in an advanced English grouping.

### *Where do you apply?*

The Office of Admissions is chiefly responsible for advising prospective students prior to application for admission and for processing applications when submitted. All inquiries concerning undergraduate work, therefore, should be submitted to:

DIRECTOR, OFFICE OF ADMISSIONS  
NORTH ADMINISTRATION BUILDING  
UNIVERSITY OF MARYLAND  
COLLEGE PARK, MARYLAND



In your first letter of inquiry you should state your educational background and your expected date of graduation from secondary school, your educational objectives, and the date of your expected entrance to the University. You should request application forms for admission and housing. It is not essential that you receive a course catalog for the College in which you are interested prior to your registration.

Your completed forms, accompanied by a \$10 application fee, should be returned to the Office of Admissions as soon as possible after your mid-year grades are available, assuming you are making application while a high school senior. The fee should be in the form of a check made payable to the University of Maryland and is non-refundable under any circumstance. The fee will be applied in lieu of the matriculation fee provided the applicant enrolls for the term applied for on his application. Applicants who have been enrolled with the University of Maryland in its Evening Division at College Park or Baltimore, or at one of its off-campus centers are not required to pay the fee since they have already paid a matriculation fee.

### *The Transfer Student*

A student must be in good standing as to scholarship and character to be eligible for transfer to the University. Advanced standing is assigned to a transfer student from an accredited institution under the following conditions: (1) A minimum of one year of resident work or not less than 30 semester hours (including the meeting of all University and curricular requirements) is necessary for a degree; (2) The University reserves the right to make the assignment of transfer credit conditional upon the student's making a satisfactory record during his first semester at the University; (3) The University reserves the right to revoke advanced standing if the transfer student's progress is at any time unsatisfactory.

### *The Special Student*

An applicant who is at least twenty-one years of age, and who has not completed the usual preparatory course, may be admitted to such courses as he seems qualified to take. A special student is ineligible to matriculate for a degree until he has satisfied the entrance requirements.

### *The Unclassified Student*

An applicant who meets entrance requirements but who does not wish to pursue a program of study leading to a degree is eligible for admission to enroll in courses for which he has the prerequisites.

### *The Foreign Student*

The foreign student applying for admission to the undergraduate schools of the University of Maryland should make application at least three months in advance of the term for which he is applying. He will be required to submit an application for admission on a form furnished upon request by the Admis-

sions Office of the University and official copies of his secondary school preparation, certificates of completion of state secondary school examinations, and records of college or university studies completed in schools in the United States or elsewhere. He will also be required to furnish proof of his ability to read, write, speak, and understand English sufficiently well to pursue satisfactorily an approved course of study in one of the Colleges of the University. Arrangements can be made for administering an English test to prospective students both in the United States and in countries abroad.

The foreign student accepted for admission to the University will receive from the Director of Admissions the Immigration I-20 form needed to secure a student visa from the American consul.

Every foreign student is expected to see the Foreign Student Adviser as soon as possible after arrival at the University. The office of the Adviser is located in the North Administration Building, Room 223.

### *When do you enter?*

New students should plan, if possible, to enter the University at the beginning of the fall semester. Application should be filed not later than August 15 for the fall semester and January 1 for the spring semester. If a student does not apply by these dates it may not be possible to process his application even if his records and recommendations are acceptable.

## Musts—Physical Education Training and Military Instruction

THE UNIVERSITY IS CONCERNED WITH THE PHYSICAL FITNESS OF EACH student. Therefore, all undergraduate men and women students, classified academically as freshmen or sophomores registered for more than six semester hours of credit, are required to enroll in and successfully complete four prescribed courses in Physical Education for a total of four semester hours of credit. These courses must be taken by all eligible students during their first two years of attendance at the University whether they intend to graduate or not.

The University operates one of the largest Air Force Reserve Officer Training Corps units in the United States. Successful completion of the required two-year course is prerequisite for graduation. The course must be taken during the first two years of attendance. Those students interested in a career in the Air Force, and who have not yet reached their 25th birthday at the time of initial enrollment in any undergraduate or graduate curriculum, may apply for advanced training in the Air Force Reserve Officer Training Corps upon satisfactory completion of the basic requirements. Successful completion of this advanced training course, and attainment of a baccalaureate degree leads to a commission in the United States Air Force Reserve or a Certificate of Completion.

### *Bases for Exemption From Military Instruction*

1. Students who have completed the basic program in other approved units of the United States Air Force, Army, or Naval R. O. T. C. will receive credit.

2. Students holding commissions in the Reserve Corps of the Army, Navy, Marine Corps, Coast Guard, or Air Force will receive credit.

3. Students who have served in the Army, Navy, Marine Corps, Coast Guard, or Air Force for a period of time long enough to be considered equivalent to the training received in the basic A. F. R. O. T. C. program will receive credit. Short periods of service in any of the branches named above will be evaluated and allowed as credit toward completion of the course.

4. Graduate students will be exempt.

5. Students classified as "special students" who are registered for less than seven semester hours will be exempt.

6. Students who have passed their thirtieth birthday before starting the course will be exempt from any part of the course not already completed.

7. Students who are not citizens of the United States or one of its territorial possessions will be exempt. Students having applied for United States citizenship will not be exempt.

## Where Will I Live?

### *Dormitories*

**ROOM RESERVATIONS.** If you desire to room in a dormitory, you should request room application cards by so indicating on your application for admission. The Director of Admissions will refer these applications to the offices of the Dean of Men or the Dean of Women. Application cards or blanks will be sent to you and should be promptly returned to the proper office. A fee of \$25.00 will be required, which will be deducted from the first semester room charges when the student registers. A room is not assured until you receive acknowledgment from the Dean concerned. If you do not claim your room on your proper registration day, the reservation will be cancelled. You may hold a room by special request until after classes begin providing you notify the dormitory offices by the first day of registration. If you desire to cancel your room reservation, fees will not be refunded if your cancellation notice is received later than July 15 for the first semester.

Applications for rooms are acted upon only when you have been fully admitted academically to the University.

All undergraduate women except those who live at home or with close relatives are required to room in the University dormitories. (If an undergraduate woman is 21 years of age or over at the time she applies for admission she may be referred to off-campus housing.) All male freshmen except those who live at home or with close relatives are required to room in the University dormitories when accommodations are available.

*New students are urged to attend to their housing arrangements at least three months in advance of registration. It is understood that all housing and board arrangements which are made for the fall semester are binding for the spring semester.*

Room and board charges begin with the evening meal prior to the first day of the registration period and include the last day of classes for each semester, with the exception of the Christmas recess and the Easter recess. If you are unable to make other arrangements for the holidays you may consult the Dean of Men or the Dean of Women for assistance.

**Equipment.** You should bring with you sufficient single blankets, sheets, pillow cases, towels, a pillow, a laundry bag, a waste paper basket and a study lamp. Each student assumes responsibility for all dormitory property assigned to him. Any damage done to the property, other than that which results from ordinary usage, will be charged to the student concerned. Where individual responsibility for damage cannot be ascertained, the amount of the damage will be prorated among the occupants of the room or dormitory in which the damage occurred.

You will be furnished with a key for your room, for which a deposit of \$1.00 will be made. The deposit will be returned in exchange for the key at the end of your stay at the University dormitory.

**Laundry.** The University does not provide laundry service. You are responsible for your own laundry. There are several reliable laundry concerns in College Park, or if you prefer, you may send your laundry home. It is also possible to make arrangements to rent towels and bed linens. You may do laundry (not including bed linens) in the laundry rooms which are located in each dormitory.

**Personal Baggage.** Baggage sent via the American Express and marked with the college housing address will be delivered when you notify the College Park Express Office of your arrival.

### *Off-Campus Housing*

Only upperclass and veteran male students are allowed to live in houses off the campus. A list of "off campus" rooms is available in the Office of the Dean of Men. All housing arrangements for undergraduate women students must be approved by the Office of the Dean of Women. Most of the "off-campus" houses have double rooms with twin beds and provide linens and towels. Some require that you furnish your own bed linens. The price for a person in a double room is about \$25.00 a month.

### *Meals*

Those of you who live in University dormitories must have your meals at the University Dining Hall, where three meals are served daily and two on Sunday. (No special diets will be furnished.)

Others may make arrangements to board by the semester at the Dining Hall. If you live off campus, lunches on school days may be obtained at the University cafeteria; lunches, breakfast and Sunday suppers may be obtained at the Student Union. There are also eating establishments available in College Park.

No rebate is made for meals not eaten at the University Dining Hall or in other places where board is paid for in advance.

## **How Much Will It Cost?**

STUDENT TUITION AND FEES AND EXPENSES FOR DORMITORY BOARD AND lodging contribute less than half of the actual expense of educating a student at the University of Maryland. The deficit is made up from monies appropriated by the State Legislature. The fees listed on the following page are effective July 1, 1960.



*Fees Effective July 1, 1960'*

<b>Fees for Undergraduate Students, Maryland Residents</b>	<b>First Semester</b>	<b>Second Semester</b>	<b>Total</b>
FIXED CHARGES .....	\$ 92.00	\$ 93.00	\$185.00
INSTRUCTIONAL MATERIALS .....	12.00	12.00	24.00
ATHLETIC FEE .....	15.00	...	15.00
STUDENT ACTIVITIES FEE .....	12.00	...	12.00
SPECIAL FEE .....	20.00	...	20.00
RECREATIONAL FACILITIES FEE .....	20.00	...	20.00
INFIRMARY FEE .....	5.00	...	5.00
ADVISORY AND TESTING FEE .....	5.00	...	5.00
<b>Total for Residents</b>	<b>\$181.00</b>	<b>\$105.00</b>	<b>\$286.00</b>

**Residents of the District of  
Columbia, Other States and  
Countries**

TUITION FEE FOR NON-RESIDENT STUDENTS .....	\$150.00	\$150.00	\$300.00
<b>Total for Non-Residents</b> .....	<b>\$331.00</b>	<b>\$255.00</b>	<b>\$586.00</b>

**Board and Lodging**

BOARD .....	\$200.00	\$200.00	\$400.00
DORMITORY ROOM			
MARYLAND RESIDENTS .....	85-100	85-100	170-200
OTHER STATES AND COUNTRIES .....	110-125	110-125	220-250

For complete information concerning fees see Appendix A.

*Can You Work Your Way Through College?*

A number of students are employed on a part-time basis by the University, others work in various capacities in shops and stores located in the College Park area. If you seek employment while pursuing a regular program of instruction, you should consult the Office of the Dean of Men who maintains a listing of available jobs within the University and in nearby commercial areas. Holiday and summer employment for undergraduates as well as full-time career employment for graduating seniors and alumni are available through the University Placement Service. The Placement Service also maintains a guidance and information service relative to full-time career employment. This assistance is on a non-fee basis.

*How About Grants and Scholarships?*

For promising young men and women who might not otherwise be able to provide themselves an opportunity for higher education, a number of grants and scholarships are available. All requests for information concerning these awards should be directed to:

DIRECTOR  
OFFICE OF SCHOLARSHIPS AND GRANTS-IN-AID  
UNIVERSITY OF MARYLAND  
COLLEGE PARK, MARYLAND

In deciding whether you are eligible to receive a grant or a scholarship, the Committee considers such qualifications as leadership, character, achievement, and participation in student activities, as well as academic ability and financial need.

You should know of the five major groupings of grants and scholarships. These are:

FULL UNIVERSITY SCHOLARSHIPS—covering board, lodging, fixed charges, fees and books;

UNIVERSITY GRANTS—awarded to deserving and qualified secondary school graduates covering fixed charges only;

GENERAL ASSEMBLY GRANTS—for fixed charges only, awarded by members of the State Legislature, three for each Senator and one for each member of the House of Delegates, only to persons in the county or in the legislative district of Baltimore City which the Delegate or Senator represents;

SPECIAL ACADEMIC SCHOLARSHIPS—awarded to students of exceptional academic ability by the Committee on Scholarships and Grants-in-Aid;

ENDOWED SCHOLARSHIPS AND GRANTS—supported by income from funds especially established for this purpose.

### *Are Loans Possible?*

Several loans are made available by private organizations to worthy students in financial need.

The American Bankers' Association Loan Fund provides loans of \$250 for one year only to senior or graduate students who are emphasizing Banking, Economics, or related subjects.

Under the will of Catherine Moore Brinkley, a loan fund is available for worthy students who are natives and residents of Maryland.

Under provisions of the National Defense Education Act, loans are available to qualified students in amounts not to exceed \$1000 per year.

## Extracurricular, Social and Religious Life

ORGANIZED STUDENT ACTIVITIES ARE RECOGNIZED AND ENCOURAGED. Opportunities are open in student government, fraternities, sororities, clubs, civic and service organizations, subject matter organizations, and recreational organizations. You may be interested in joining the band or the staff of one of the student publications. You may be interested in athletics or perhaps you will want to become a member of a club or society which has a primary interest in the informal investigation of an academic specialty.

The Student Government Association represents all students and operates under an approved constitution and by-laws. The Associated Women Students, in cooperation with the Dean of Women, is concerned with matters pertaining to women students. The Men's League, in cooperation with the Dean of Men, is concerned with matters pertaining to men students.

The University Band is under the supervision of the Department of Music and is composed of four groups: the Marching Band, the Symphonic Band, the Air Force R.O.T.C. Band, and the Pep Band. Membership is open to all registered students who meet the requirement of audition.

Five student publications are published with faculty guidance and the general supervision of the Committee on Student Publications and Communications.

They are: *The Diamondback*, the campus newspaper; *The Terrapin*, the student yearbook; *The Old Line*, a magazine of humor, literature and art; *The M Book*, the student handbook; and *Expression*, campus literary magazine.

### *Athletics and Recreation*

The University recognizes the importance of the physical development of all students and, in addition to the required physical education for freshmen and sophomores, sponsors a comprehensive intercollegiate and intramural program. Students are encouraged to participate in competitive athletics and to learn the skill of games that may be carried on after leaving college. The intramural program, which covers a large variety of sports, is conducted by the Physical Education Department for both men and women.

The Council on Intercollegiate Athletics sponsors and supervises a full program of intercollegiate athletics in every form necessary to meet the needs of the student body. By keeping this program in proper bounds, it becomes an incidental feature of University life. Each student is encouraged to participate in the program, either as an athlete or as a spectator. A strong intercollegiate program creates the incentives for extensive participation in the intramural program and, further, the program furnishes a rallying point of common interest for students, alumni, and faculty.

The University is a member of the Atlantic Coast Conference, the National Collegiate Athletic Association, the United States Intercollegiate Lacrosse Association, the Intercollegiate Amateur Athletic Association of America, and cooperates with other national organizations in the promotion of amateur athletics.

The University has an activities building which contains a modern gymnasium, a swimming pool, training facilities for indoor sports, physical education laboratories, and an arena; also a large armory; a modern stadium with a running track; a number of athletic fields; tennis courts; golf course; baseball diamonds; and a gymnasium and swimming pool for women.

### *To Round Out Your Experience*

Many clubs and societies, with literary, art, cultural, scientific, social, and other special objectives function at the University. Some of these are strictly student organizations; others are conducted jointly by students and members of the faculty.

To round out your college experience there are many social functions occurring throughout the year. Formal dances are presented by each of the classes and there is the Homecoming Dance each November. In addition, various clubs, sororities, and fraternities have smaller parties taking place throughout the year. Dormitories sponsor exchange desserts and open houses from time to time. For freshmen there is an extensive Orientation Week program which includes a number of social events, designed to acquaint new students with each other and with the University.

The All-Faith Memorial Chapel is one of the most beautiful structures of its kind in the nation. Within its shelter are housed the offices of chaplains, representing the major denominational bodies, and there are many opportunities for you to consult with the minister of your faith. Chances are that you will want to join a religious club such as the Canterbury Association (Episcopal), Channing Fellowship (Unitarian), Christian Fellowship (non-denominational),

Christian Science Club, Hillel Foundation (Jewish), Lutheran Students Association, Newman Club (Roman Catholic), Westminster Foundation (Presbyterian), and the Wesley Foundation (Methodist).

## Academic Standards

THE STUDENT WHO MAINTAINS AT LEAST A "C" AVERAGE IN ACADEMIC SUBJECTS is proceeding satisfactorily toward graduation. The student who does not maintain this average is falling behind.

The student who fails fifty percent or more of his academic work will normally not be permitted to continue. Special provisions, however, are made for the student who has difficulty in the first semester of his freshman year. The student who fails more than 35% of his academic work in any semester or who fails to make a minimum 1.5 average for the academic year will be placed on academic probation. Each student must earn junior standing within a specified time in order to be eligible to continue in the University.

The regulations governing junior standing, academic probation, and academic dismissal are printed in a separate publication, *University General and Academic Regulations*. Every student should familiarize himself with these regulations. The student who is granted a trial admission will find in this publication a statement of the special rules applicable to students who have been granted this conditional admission.

## Special Services

### *Student Health*

The University recognizes its responsibility for safeguarding the health of its students. All new undergraduate students are required to undergo a thorough physical examination prior to their registration. A well-equipped infirmary is available for the treatment of sick or injured students, and a nurse is on duty at all hours.

All dormitories, off-campus houses, sorority and fraternity houses are inspected periodically by the Student Health Service to make certain that proper sanitary conditions are maintained.

Group Accident Insurance, issued by a national company, is available to students on a voluntary basis.

### *Counseling Services*

The services of three offices are available for counseling and guidance: the Office of the Dean of Men, the Office of the Dean of Women, and the University Counseling Center which provides individual assistance concerning vocational choice, personal problems and personal educational progress.

The Counseling Center is staffed by a well trained group of counseling psychologists. Psychiatric and other medical consultation is available if needed. As part of its program, the Counseling Center operates a Reading and Study Skills Laboratory for students having difficulties in reading or studying effectively. In the laboratory, students typically meet in small groups set up to deal with common problems. Individual work is also provided so that individual problems may be dealt with.



## *University Post Office*

The University operates an office for the reception, dispatch and delivery of the United States Mail, including parcel post items, and for inter-office communication. The office is not part of the United States Postal System and no facilities are available for the receipt or transmission of postal money orders; all registered and insured mail must be picked up at the regular United States Post Office in the town of College Park.

At the time of registration, each student is assigned a postal box for which a small fee is charged.

## *The Student Union*

It is the University policy to assign meeting space in the Student Union Building, as far as it is practical to do so, for all student and faculty organizations. This building has available a total of 9 meeting rooms varying in capacity from 25 to 300. No charge will be made for any student or faculty organization on the College Park campus that wishes to meet in the Student Union.

Special charges for dances and other extra services may be necessary. Located in the building are lounges for relaxation or study, television rooms, music lounge with a record library, billiard room, coffee shop, tobacco shop, student supply store and campus post office.

## *The Program in American Civilization*

IN THIS MODERN ERA OF IDEOLOGICAL CONFLICT, WITH THE PRESENCE OF totalitarian systems and their cynical philosophies, the University considers it important for every student to achieve an appreciative understanding of his country, its history and its culture. It has therefore established a comprehensive program in American Civilization to provide the student with a general educational background which is the rightful heritage of every American citizen.

Work in American Civilization is offered at three distinct academic levels. The first level is required of all freshmen and sophomores at the University. The second level is for undergraduate students wishing to carry a major in this area. The third level is for students desiring to do graduate work in this area. Majors in American Civilization should obtain a catalog for the College of Arts and Sciences, and graduate students should obtain a catalog for the Graduate School from offices of the respective deans upon the student's arrival on campus.

The University of Maryland takes pride in its rich and colorful past, its tradition of tolerance, and its constant dedication to the ideals on which the American Republic was founded. It attempts, through the American Civilization Program, to pass on this common heritage to each of its students.

The succeeding pages describe briefly the undergraduate programs offered by each of the colleges. Sufficient information is provided herein to enable the applicant to select a major area of specialization and to matriculate at the University. Course catalogs of the various colleges may be obtained at the appropriate dean's office and should be used by the new student in consultation with his major field adviser.



## COLLEGE OF AGRICULTURE

**FOUR-YEAR PROGRAMS LEADING TO THE BACHELOR OF SCIENCE DEGREE** include courses in the American Civilization Program, in basic biological and physical sciences, along with courses in the various phases of agriculture.

**AGRICULTURE-GENERAL.** For students preparing to return to the farm and for those preparing to work in any general field of agriculture.

**AGRICULTURAL CHEMISTRY.** Prepares students for work in food laboratories and fertilizer industries and for research in industries related to agriculture.

**AGRICULTURAL ECONOMICS.** Prepares students for employment in agri-business, production and marketing of agricultural products.

**AGRICULTURAL AND EXTENSION EDUCATION.** For students preparing to teach vocational agriculture to pursue extension work or rural education services.

**AGRICULTURE-ENGINEERING.** A five-year program in Agriculture and Engineering leading to a B. S. degree in agriculture at the end of the fourth year and a B. S. degree in one of the engineering fields at the end of the fifth year.

**AGRONOMY (CROPS AND SOILS).** The basic principles of crop production, soil science and soil conservation.

**ANIMAL HUSBANDRY.** Basic and applied training in the specialized field of animal husbandry.

**BOTANY.** The basic plant science work includes plant morphology, taxonomy and plant pathology and plant physiology and ecology.

**DAIRY (DAIRY HUSBANDRY AND DAIRY TECHNOLOGY).** Basic and applied training in dairy production and dairy processing and distribution.

**ENTOMOLOGY.** Basic training in entomology and related fields of insect life and control.

**HORTICULTURE (FRUITS AND VEGETABLES, FLORICULTURE AND ORNAMENTAL HORTICULTURE AND FOOD PROCESSING).** Technical training in fruits, vegetables, flowers, ornamental gardening and processing of horticultural crops.

**POULTRY.** Basic training in poultry production, marketing and processing poultry products.

## PRE-PROFESSIONAL PROGRAMS

**PRE-FORESTRY.** Fundamental courses for students preparing to study forestry in another institution.

**PRE-THEOLOGY.** Fundamental courses in agriculture as a preparation for the rural ministry.

**PRE-VETERINARY.** A program designed for students who wish to prepare for the study of Veterinary Medicine.

**TWO-YEAR PROGRAM IN AGRICULTURE.** A program designed for students desiring two years of specialized college training.

## LABORATORY

Up-to-date laboratory facilities are provided for effective instruction in plant and animal sciences and related fields in agriculture. Research facilities provide an additional opportunity for effective instruction.

## TYPICAL PROGRAM FOR THE FRESHMAN YEAR

### FIRST SEMESTER

*English*  
*Government & Politics*  
*R. O. T. C. (men)*  
*Health (women)*  
*Agriculture*  
*Botany*  
*Agricultural electives*  
*Physical Activities*

### SECOND SEMESTER

*English*  
*Sociology, Philosophy or*  
*Psychology*  
*R.O.T.C. (men)*  
*Health (women)*  
*Zoology*  
*Agricultural electives*  
*Physical Activities*

## RECOMMENDED PREPARATION IN HIGH SCHOOL

<i>English</i> . . . . .	<i>4 units</i>
<i>Mathematics (College Preparatory)</i> . . . . .	<i>2 units</i>
<i>(Algebra 1 unit and Plane Geometry 1 unit—Agriculture-Engineering and Agricultural Chemistry require 2 additional units)</i>	
<i>Biological and Physical Sciences</i> . . . . .	<i>3 units</i>
<i>History and Social Sciences</i> . . . . .	<i>2 units</i>

Two units of foreign language are recommended for students in Agriculture-Engineering, Agricultural Chemistry, Botany and Entomology.



## COLLEGE OF ARTS AND SCIENCES

### BACHELOR OF ARTS

THE COLLEGE OF ARTS AND SCIENCES OFFERS ITS STUDENTS A LIBERAL education. It seeks to develop graduates who can deal intelligently with the problems which confront them and whose general education will be a continuing source not only of material profit, but of genuine personal satisfaction. The programs combine liberal education with special concentration in one or more of the basic intellectual or artistic disciplines.

A liberal arts education is the normal preparation for the student who plans to go to law school; to a post-graduate or professional school of business administration, library science or social service; or to a theological seminary.

The student interested in research (business and industry, government, university) and in college teaching will receive the undergraduate preparation necessary for the graduate work required in these fields.

By including the appropriate courses in education, a student in many of these areas can qualify for public school teaching. For students interested in foreign service, the foreign area programs combine intensive study of a language with study of the civilization of the area. Other special fields in business and government are open to the student who completes a liberal arts education with a suitable concentration in a single field of study.

Specialized programs are also offered in the fine arts (art, drama, music) and in speech therapy.



## FOUR YEAR BACHELOR OF ARTS DEGREE PROGRAMS

*American Civilization*

*Art\*\**

*Economics\**

*English*

*Foreign Area Studies (French, German, Latin American, Russian, Spanish)*

*French*

*Geography\**

*German*

*Government and Politics\**

*Greek*

*History*

*Latin*

*Music (see also Bachelor of Music degree)*

*Philosophy*

*Psychology*

*Sociology (including also a program in Crime Control)*

*Spanish*

*Speech (including also programs in Dramatic Art and in Speech Therapy)*

*\* Programs in these fields are also offered in the College of Business and Public Administration.*

*\*\* A program in Practical Art is offered in the College of Home Economics. A student may also earn a degree in Art Education.*

**PRE-LAW.** A three year program, followed by three years of Law at the University of Maryland Law School, leads to the A. B. and LL.B. degree. Pre-law students may also follow any of the four-year programs and earn the Bachelor of Arts degree before entering law school.

**BACHELOR OF MUSIC.** Four year program leading to the Bachelor of Music degree. Professional training in theory-composition, history-literature, and applied music (voice or instrument).

### TYPICAL PROGRAM FOR THE FRESHMAN YEAR

Typical program for the freshman year for students following a program leading to the Bachelor of Arts degree:

#### FIRST SEMESTER

*English*

*Science or Mathematics*

*Foreign Language*

*Sociology or Philosophy*

*Public Speaking*

*R. O. T. C. (men)*

*Health (women)*

*Physical Activities*

#### SECOND SEMESTER

*English*

*Science or Mathematics*

*Foreign Language*

*American Government*

*Public Speaking*

*R. O. T. C. (men)*

*Health (women)*

*Physical Activities*

## RECOMMENDED PREPARATION IN HIGH SCHOOL

<i>English</i> .....	4 units
<i>Mathematics</i> .....	3 or 4 units of College Preparatory Mathematics
<i>Biological and Physical Sciences</i> .....	1 or more units
<i>History and Social Sciences</i> .....	1 or more units
<i>Foreign Languages and Latin</i> .....	2 or more units

## BACHELOR OF SCIENCE

THE PROGRAM IN EACH OF THE SCIENCE FIELDS COMBINES LIBERAL EDUCATION with a concentration in one of the basic sciences or in mathematics. The graduates of these science programs are prepared for specialized positions in industry and government.

The student in these science programs can also gain the preparation necessary for admission to the professional schools of medicine and dentistry or for admission to graduate work leading to advanced degrees in Mathematics, Chemistry, Physics, and the Biological Sciences. Research work (industry, government, university) and college teaching are among the possibilities open to the student who successfully completes an undergraduate and graduate program in mathematics or one of the basic sciences.

### FOUR YEAR BACHELOR OF SCIENCE DEGREE PROGRAMS

*Botany\**  
*Chemistry*  
*Mathematics*  
*Microbiology*  
*Physics*  
*Psychology*  
*Zoology*  
*General Biological Sciences*  
*General Physical Sciences*

\* A curriculum in Botany is also offered in the College of Agriculture.

PRE-MEDICAL AND PRE-DENTAL PROGRAMS. A three-year program meeting minimum requirements for medical school or dental school. A four-year program in any of the major fields in the College of Arts and Sciences leading to an A. B. or B. S. degree.

### TYPICAL PROGRAM FOR THE FRESHMAN YEAR

#### FIRST SEMESTER

*English*  
*Mathematics*  
*Science (one or more of the  
 introductory courses)*  
*Sociology or Philosophy*  
*R. O. T. C. (men)*  
*Health (women)*  
*Physical Activities*

#### SECOND SEMESTER

*English*  
*Mathematics*  
*Science (continued)*  
*American Government*  
*Public Speaking*  
*R. O. T. C. (men)*  
*Health (women)*  
*Physical Activities*

For the pre-medical and pre-dental student . . .

FIRST SEMESTER

*English*  
*Mathematics*  
*Chemistry*  
*Zoology*  
*R. O. T. C. (men)*  
*Health (women)*  
*Physical Activities*

SECOND SEMESTER

*English*  
*Mathematics*  
*Chemistry*  
*Zoology*  
*R. O. T. C. (men)*  
*Health (women)*  
*Physical Activities*

RECOMMENDED PREPARATION IN HIGH SCHOOL

*English* ..... 4 units  
*Mathematics* ..... 4 units of College  
Preparatory Mathematics  
*Biological and Physical Sciences* ..... 1 or more units, including  
Chemistry and Physics, if  
possible  
*History and Social Sciences* ..... 1 or more units  
*Foreign Languages and Latin* ..... 2 or more units





## COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION

**FOUR YEAR PROGRAMS LEADING TO THE BACHELOR OF SCIENCE DEGREE ARE offered by the College of Business and Public Administration in the following fields:**

**BUSINESS ORGANIZATION AND ADMINISTRATION.** The curriculums of the Department of Business Organization and Administration emphasize the principles and problems of the development and the use of policies and organizations, and the methods, techniques and procedures of execution—in other words, the essence of Administration and Management. The program of study for any individual student may be so arranged as to meet the needs of those preparing for specific lines of work such as accounting, advertising, banking, foreign trade, industrial administration, marketing administration, personnel administration, transportation, office management, real estate practice, insurance, journalism, public relations, government employment, office techniques, teaching and research.

**ECONOMICS.** The program of studies in the field of Economics is designed to meet the needs of students who wish to concentrate either on a major or minor scale in this division of the Social Studies.

**FOREIGN SERVICE AND INTERNATIONAL RELATIONS.** If the student expects to enter the foreign service, he should be well grounded in the language, geography, history, and politics of the region of his anticipated location as well as in the general principles and practices of organization and administration. It should be recognized that only a limited training can be secured during the undergraduate program.

**GEOGRAPHY.** This curriculum is designed to aid the student in securing the facts concerning the major geographical areas of the world and in studying and analyzing the manner in which these facts affect economic, political, and social activities. The student interested in international trade, international political relations, diplomacy, overseas governments, and national aspirations will find the courses in this department of great practical value.

**GOVERNMENT AND POLITICS.** The Department of Government and Politics offers course work designed to prepare students for government service, politics, foreign assignments, and intelligent and purposeful citizenship. If desired, students may specialize in international relations, foreign governments, public administration, public law, public policy, political theory, state and local government and administration, or a combination of these fields.

**JOURNALISM AND PUBLIC RELATIONS.** The Department offers two professional majors: one in editorial journalism, for those who seek beginning news jobs upon graduation; the other in public relations, for those who plan to work in public relations, in public information, or on company publications.

**OFFICE MANAGEMENT AND TECHNIQUES.** The purpose of the curriculums is not only to furnish merely technical or vocational training, but also, to aid the student in developing his natural aptitudes for secretarial and administrative positions. The development of the student's capacity to plan, organize, direct, and execute is the guiding principle followed in these curriculums.

The teaching staff and the curriculums of the College of Business and Public Administration have been selected and organized for the purpose of providing a type of professional and technical education that will aid the capable and ambitious student in developing his potential talents to their full capacity.

#### TYPICAL PROGRAM FOR THE FRESHMAN YEAR

##### FIRST SEMESTER

*English*  
*Geography*  
*Economics*  
*Organization and*  
*Control*  
*Government & Politics*  
*Speech*  
*R. O. T. C. (men)*  
*Health (women)*  
*Physical Activities*

##### SECOND SEMESTER

*English*  
*Geography*  
*Economics*  
*Organization and*  
*Control*  
*Government & Politics*  
*Speech*  
*R. O. T. C. (men)*  
*Health (women)*  
*Physical Activities*

#### RECOMMENDED PREPARATION IN HIGH SCHOOL

In general, four units of English and one unit each of Social Studies and Natural Sciences are required. At least one unit of Algebra is required and one unit of Plane Geometry is desirable. While foreign language is desirable for a certain program, no foreign language is required for entrance. Fine Arts, Trade and Vocational subjects are acceptable as electives.





## COLLEGE OF EDUCATION

THE CURRICULUMS IN THE COLLEGE OF EDUCATION PROVIDE OPPORTUNITIES for persons to qualify for certification to teach in the public schools in the following subject matter areas and/or grade levels, except in the one instance noted which is a program preparing for positions of an educational nature in industry. These are four-year programs leading to a Bachelor of Arts or Bachelor of Science degree:

ACADEMIC EDUCATION (SECONDARY SCHOOLS). English, foreign languages, mathematics, social sciences, natural sciences, speech (minor only).

AGRICULTURAL EDUCATION (SECONDARY SCHOOLS. OFFERED BY THE COLLEGE OF AGRICULTURE)

ART EDUCATION (SECONDARY SCHOOLS)

BUSINESS EDUCATION (SECONDARY SCHOOLS)

CHILDHOOD EDUCATION (NURSERY SCHOOLS AND KINDERGARTEN BOTH PUBLIC AND PRIVATE)

ELEMENTARY EDUCATION (ELEMENTARY SCHOOLS; GRADES 1-6)

HOME ECONOMICS EDUCATION (SECONDARY SCHOOLS; VOCATIONAL OR GENERAL)

INDUSTRIAL EDUCATION (SECONDARY SCHOOLS; INDUSTRIAL ARTS OR VOCATIONAL-INDUSTRIAL EDUCATION)

EDUCATION FOR INDUSTRY (PREPARES STUDENTS FOR ENTRANCE INTO SUPERVISORY OR MANAGEMENT POSITIONS IN INDUSTRY)

MUSIC EDUCATION (ELEMENTARY AND SECONDARY SCHOOLS; VOCAL OR INSTRUMENTAL)

PHYSICAL EDUCATION AND HEALTH EDUCATION (SECONDARY SCHOOLS; PHYSICAL EDUCATION ALSO IN ELEMENTARY SCHOOLS)

Majors in English, social sciences, language, and art receive the B. A. degree. Majors in mathematics may receive either degree. Majors in all other fields receive the B. S. degree.

### SPECIAL FACILITIES

The Institute for Child Study conducts child study programs and provides for the supervision of undergraduate students in the study of children as a part of their program in preparation for teaching. Modern equipped shops and classrooms in a new building house the Industrial Education Department. A nursery-kindergarten laboratory school provides for practical experience of students in childhood education. Schools in nearby areas offer rich opportunities for observation and student teaching.

## 1. TYPICAL PROGRAM FOR THE FRESHMAN YEAR

*For Students Preparing to Teach in Elementary Schools or  
Nursery Schools and Kindergartens.*

### FIRST SEMESTER

*Ed. 1 Freshman Orientation*  
*Eng. 1 Composition and American Literature*  
*Soc. 1 Sociology of American Life or Phil. 1 Philosophy for Modern Man or an Economics Course*  
*Bot. 1 General Botany*  
*Art 15 Fundamentals of Art (Elem. major)*  
*A.S. 1 R.O.T.C. (men)*  
*Health 2 Personal Health (women)*  
*P.E. Physical Education*

### SECOND SEMESTER

*Eng. 2 Composition and American Literature*  
*G.&P. 1 American Government*  
*Zool. 1 General Zoology*  
*Mus. 16 Music Fundamentals for the classroom teacher (Elem. major)*  
*A.S. 1 R.O.T.C. (men)*  
*Health 4 Community Health (women)*  
*P.E. Physical Education*  
*Sp. 3 Fundamentals of General American Speech (Childhood Education major)*  
*C.Ed. 2 Introduction to Childhood Education (Childhood Education major)*

## II. TYPICAL PROGRAM FOR THE FRESHMAN YEAR

*For Students Majoring in any of the Fields Preparing to Teach  
in Secondary Schools.*

### FIRST SEMESTER

*Ed. 1 Freshman Orientation*  
*Eng. 1 Composition and American Literature*  
*Soc. 1 Sociology of American Life or Phil. 1 Philosophy for Modern Man or an Economics Course*  
*Sp. 1 Public Speaking*  
*A.S. 1 R.O.T.C. (men)*  
*Health 2 Personal Health (women)*  
*P.E. Physical Education*  
*Science, mathematics, foreign language, or requirements in major and minor fields*

### SECOND SEMESTER

*Eng. 2 Composition and American Literature*  
*Sp. 2 Public Speaking*  
*G.&P. 1 American Government*  
*A.S. 2 R.O.T.C. (men)*  
*Health 4 Community Health (women)*  
*P.E. Physical Education*  
*Science, mathematics, foreign language, or requirements in major and minor fields*

## RECOMMENDED PREPARATION IN HIGH SCHOOL

Four units of English and one unit each of social sciences, natural sciences, and mathematics are required. For some major fields two units of mathematics are required. Additional units in mathematics, natural sciences, social sciences, and foreign languages are desirable for a program that permits the greatest amount of flexibility in meeting the requirements of various College of Education curricula. Fine arts, trade and vocational subjects are acceptable as electives.

# COLLEGE OF ENGINEERING

## *Glenn L. Martin Institute of Technology*

FOUR-YEAR PROGRAMS LEAD TO THE BACHELOR OF SCIENCE DEGREE IN AERONAUTICAL, chemical, civil, electrical, and mechanical engineering. Each program integrates these elements: (1) BASIC SCIENCES including mathematics, physics, chemistry; (2) ENGINEERING SCIENCES including mechanics of solids and fluids, engineering materials, thermodynamics, electricity and magnetism; (3) PROFESSIONAL STUDIES in aeronautical, chemical, civil, electrical or mechanical engineering; (4) LIBERAL ARTS AND SOCIAL STUDIES in "The American Civilization Program," and (5) CERTAIN OTHER REQUIRED SUBJECTS including military science and physical activities.

Each program lays a broad base for *continued learning* after college in professional practice, in business or industry, in public service, or in graduate study and research.

The following is representative of work performed by engineering graduates.

THE AERONAUTICAL ENGINEER deals with problems related to transporting people and things by air and through space. Aerodynamics, thermodynamics, and the mechanics of fluids and solids are among his basic sciences. He may apply them in some phase of planning or producing airplanes, missiles, or rockets, or devising means to sustain and control their flight.

THE CHEMICAL ENGINEER applies chemistry to development and economic production of industrial chemicals, fuels, modern synthetics and certain alloys. He also applies mechanics, thermodynamics, reaction kinetics and aspects of nuclear science to unit operations and processes which are fundamental in the design and operation of the chemical industries.

THE CIVIL ENGINEER is primarily a planner, a designer, a builder, and a manager of public works and private enterprise. His professional service plays a major role in designing, supervising construction, or managing virtually every large building, bridge, dam, highway, railway, airport, water supply, waste disposal system, city plan, industrial plant, public works project, etc.

THE ELECTRICAL ENGINEER puts mathematics and the physical sciences to practical use in designing systems to generate, transmit, distribute, and use electrical energy; to transmit and receive "intelligence," as for example by telephone, radio, radar, television and computers; and to regulate and control mechanical and industrial processes by electronics and servomechanisms.

THE MECHANICAL ENGINEER figures ways to transmit power economically by heat or by mechanical systems. He applies the mechanics of fluids and solids, thermodynamics, and an understanding of the behavior of engineering materials under different conditions. As a professional engineer he devises processes for industrial production. As an industrial agent he serves as a supervisor, manager, or sales representative.





# RECOMMENDED PREPARATION IN HIGH SCHOOL

If you wish to become a *professional engineer* you should enroll in an *academic* program in high school. Subjects that are recommended and required for admission are these:

SUBJECTS	RECOMMENDED	REQUIRED
<i>English</i>	4 units	4 units
<i>Mathematics (college preparatory)—including algebra (2), plane geometry (1), and solid geometry, trigonometry, or advanced mathematics</i>	3½	3½
<i>History and social sciences</i>	2	1
<i>Physical sciences</i>	2	1
<i>Foreign language—German or French</i>	2	0
<i>Unspecified academic subjects or suitable electives</i>	2½	6½
<i>Total</i>	16	16

## TYPICAL PROGRAM FOR THE FRESHMAN YEAR

All engineering students enroll in essentially the same subjects during their first year in college as follows:

SUBJECTS	SEMESTER	
	I	II
<i>Composition and American Literature</i>	3	3
<i>Public Speaking</i>	—	2
<i>Elementary Mathematical Analysis</i>	5	5
<i>General Chemistry</i>	4	4
<i>Engineering Drawing</i>	2	2
<i>Basic Air Force R.O.T.C.</i>	3	3
<i>Physical Activities</i>	1	1
<i>Total</i>	18	20

The numbers are "semester-credits." A student should plan to devote each week, on the average, three hours of *effective work* for each semester-credit on his schedule.

Each engineering student will select his major-line department—acronautical, chemical, civil, electrical, or mechanical—before he begins his sophomore year's work. Thereafter he will pursue the approved program of his department which leads to the bachelor's degree.

Advanced engineering students who show promise of creativity and leadership in engineering, in the engineering sciences, and in teaching and research, are encouraged to continue in a program of graduate study leading to master's and doctor's degrees. There is an acute shortage of engineers with earned doctor's degrees. There are challenging opportunities for able men with such top-level preparation. The time to plan and to begin working for these top-level opportunities is while you are in high school. Your parents and your teachers can *help* provide the *opportunity*—after that *your education* is up to you. Plan to make the best of it!



## COLLEGE OF HOME ECONOMICS

THE EDUCATIONAL PROGRAM OF THE COLLEGE OF HOME ECONOMICS IS planned to help students function effectively as individuals, as family members and responsible citizens; to interpret the art and science of better home living, and to prepare men and women for positions for which home economics is a major or minor preparation. Basic course requirements are similar for all home economics curricula. Entering freshmen may enroll the first year without choosing a specific major area and an assigned adviser will counsel with him relative to his program.

Coordination of the sciences and arts toward constructive family life appropriate to our society is a primary function of home economics. This College, as part of the University, provides students the opportunity to elect studies in many fields. The function of home economics is to integrate the contributions of the physical biological sciences, the social sciences, psychology, philosophy, and art in the treatment of all phases of home and family life, to the end that they are used by families in all parts of society and by the agencies serving families.

There are four departments in the College: Home Management, Equipment, and Family Economics; Food, Nutrition, and Institution Management; Practical Art and Crafts; Textiles and Clothing. Effort is made to interrelate the work of the departments so that students think of them not as isolated divisions but rather as different aspects of the total program of offerings in home economics and closely allied fields.

Graduates of the College of Home Economics have basic preparation for a wide variety of occupations or careers. The present program of offerings leading to the Bachelor of Science degree includes the following major curricula:

**GENERAL HOME ECONOMICS.** The program is designed to meet the needs of students who wish a background in several areas of home economics related to home and community living. Courses may be selected from the various areas of home economics to meet individual needs and interests. Preparation for the profession of homemaking is a recognized aspect of this curriculum. Graduates are employed with business firms—working with textiles, clothing, or equipment; in promotion—testing, demonstrations, consumer education, writing, or a combination of these.

**HOME ECONOMICS EDUCATION.** This program is designed for students who are preparing to teach education for home and family living in the schools, or to engage in any phase of home economics work which requires a knowledge of teaching methods. It includes studies of all phases of home economics and the allied sciences, with professional training for teaching these subjects. A student majoring in this curriculum may qualify for a science minor.

**HOME ECONOMICS EXTENSION.** The program to prepare a student to become a home demonstration agent combines the general home economics courses with extension methods and home economics education. Courses in speech, journalism, and rural sociology are essential, and suggested elective subjects include literature, philosophy, art, drama, and radio.

**FOOD AND NUTRITION.** Students learn the scientific principles underlying food selection, purchase, preparation and service; nutritional needs of persons of different ages and occupations; food processing and marketing, and consumption practices. They develop some skill in handling foods and some ability to manage time, energy, and money effectively in supplying food for the family. They learn how food affects health and human relations and they acquire the ability to improve the nutritional well being of individuals and families. Because food and nutrition are applied sciences, courses in chemistry, physiology, bacteriology, psychology and economics are essential to their understanding. Graduates find positions in the consumer education departments of food companies and their trade associations, magazine and advertising firms, in testing, editorial or promotion work, or as nutritionists with industry or in state or community programs.

**INSTITUTION MANAGEMENT.** The courses in Institution Management emphasize food preparation and service in quantity, food science, sanitation, organization and administration procedures, personnel management, human relations, teaching methods, nutrition, menu planning, quantity purchasing, cost control, physical plant layout, and the selection and care of institution equipment. Work experience in an institutional food service is required during the summer between the junior and senior year. Graduates have positions dealing with food production, supervision, diet therapy, administration or teaching in school lunch programs, colleges or commercial food service, government institutions or hospitals.

**PRACTICAL ART; CRAFTS.** This program permits a choice of three majors: art in advertising, interior design and costume design. Graduates will have studied in the areas of designing, promotion, selling or buying of wearing apparel or house furnishings or both. The crafts program permits a choice of two vocational areas: pre-occupational therapy and teaching. In this program emphasis is given to creative expression through ceramics, metalry and weaving.

TEXTILES AND CLOTHING; TEXTILES. The programs are planned for students desiring to capitalize on their interest in clothing or home furnishings for personal living and future careers through a fuller development of knowledge and talents in these fields. Experience gained from courses in textiles, clothing and related fields of the social and physical sciences promotes understanding of textiles, fashion, clothing design and construction in relation to technological and social developments influential in determining consumer and employee behavior in the ever-changing textile and clothing market. Graduates have positions in homemaking and/or merchandising, designing, fashion promotion, textile testing, and in research.

#### LABORATORY FACILITIES

Facilities for studying work simplification and household equipment are available in a home management laboratory. A home management house serves as a residence-laboratory for senior students to experience managerial situations under family living conditions.

Three foods laboratories are available for teaching the courses in food preparation, preservation, economics, and experimental and foreign foods. For meal management study a dining room is provided adjacent to the foods laboratory.

The nutrition laboratory includes facilities for biochemical analysis of food, including vitamin determination, and facilities for rat feeding experimentation.

Well-equipped contemporary studios enable students in practical art to sample specialized techniques and media, such as display, photography, air brush, silk screen, water color painting, scale drafting, enameling on metal, and clay sculpture.

Textiles and clothing facilities include two well equipped laboratories for clothing design and construction, a workroom for use by students and faculty, and two laboratories used in textile analysis and testing.

#### TYPICAL PROGRAM FOR THE FRESHMAN YEAR

##### FIRST SEMESTER

*English Composition and Literature*  
*American Government*  
*Public Speaking*  
*Home Economics Orientation*  
*Design*  
*Personal Health (women)*  
*R.O.T.C. (men)*  
*Physical Activities*  
*General Chemistry, Science, or Elective*

##### SECOND SEMESTER

*English Composition and Literature*  
*Sociology of American Life*  
*Textiles*  
*Community Health (women)*  
*R.O.T.C. (men)*  
*Physical Activities*  
*General Chemistry, Science, or Elective*

#### RECOMMENDED PREPARATION IN HIGH SCHOOL

Four units of English and one unit each of social sciences, natural sciences, and mathematics are required. Additional units in mathematics, natural sciences, social sciences, foreign language, and home and family living are desirable for a program that permits the greatest amount of flexibility in meeting the requirements of various curricula in the College.





## COLLEGE OF PHYSICAL EDUCATION, RECREATION, AND HEALTH

### **F**OUR YEAR PROGRAMS LEADING TO THE BACHELOR OF SCIENCE DEGREE:

**PHYSICAL EDUCATION.** The curriculum provides an adequate background in general education and scientific areas closely related to this field. Development of skills in a wide range of motor activities is emphasized. Many vocational opportunities are available in public and private schools, organized camping, youth and adult organizations which offer a program of physical activity.

**DANCE.** With the increasing recognition of the importance and scope of dance in educational programs, the need for teachers adequately trained in dance far exceeds the number available. The professional curriculum in dance is constructed to meet the steadily rising demand for personnel qualified to teach dance in college, secondary, elementary schools, in camps, recreational agencies and in preparation for dance therapy.

**RECREATION.** Through area courses in sports, speech and drama, music, arts and crafts, nature lore, and those courses in the major field itself, program planning, organization and administration, leadership, techniques, etc. students are qualified to accept leadership positions in hospitals, industry, churches, public departments, with the armed forces or the many public and private agencies.

**HEALTH EDUCATION.** A healthy nation is not primarily the responsibility of physicians and druggists but of the people themselves. This means that people need to know how to live healthfully and to utilize available health facilities—that is they all need health education. Persons qualified to teach health are needed in schools, colleges, community health agencies and hospitals. Students interested in qualifying for supervisory or college-level positions are encouraged



to plan on doing graduate work either in school health or public health education.

**PHYSICAL THERAPY.** Physical therapy is one of the professions which has come into prominence as the scope of medical care has expanded. The modern concept of the rehabilitation of acute and chronically disabled persons has created an increasing demand for physical therapy service. It offers careers for both men and women who are interested in becoming members of a service which assists the ill and handicapped achieve maximum restoration of physical function.

The University of Maryland offers a course of physical therapy leading to the Bachelor of Science degree and to a certificate of proficiency in physical therapy.

#### RECOMMENDED PREPARATION IN HIGH SCHOOL

In addition to the four units of English and one unit each of Social and Natural Sciences, it is especially desirable for students to have at least one unit each in Biological and Physical Science and in Algebra and Plane Geometry. Any experience in music, drama, camping, playground and recreational activities, and group leadership also will be helpful. In addition, participation in school programs of health and safety education and in physical education and athletics are desirable.

#### SPECIAL FACILITIES

The facilities on the campus include five gymnasias, two swimming pools, a physical fitness research laboratory, tennis courts, sports fields, golf driving range and golf course, dance studio, and an excellent library. The Washington YMCA camp, Camp Letts, also is used for certain activities.

Students also are encouraged to use the excellent facilities of the Library of Congress, Army Medical Library and Museum, and the National Institutes of Health.

#### EXPERIENCES

In addition to classroom and laboratory work, opportunities for teaching on and off campus and participating in field experience are provided. Membership in professional groups such as Phi Alpha Epsilon, Aqualiners, Dance Club and Gymkana troupe is encouraged as well as participation in other campus activities. In each of the fields of specialization in this College unique opportunities in dance, sports, recreation, musical and dramatics organizations exist in the environs of Washington and Baltimore.

#### TYPICAL PROGRAM FOR THE FRESHMAN YEAR

**FIRST SEMESTER.** English; Government and Politics; Speech; Introduction to Physical Education, Recreation and Health; Rhythmic Analysis and Movement; Sport Skills and Gymnastics; Basic Body Controls (Women); R.O.T.C. (Men)

**SECOND SEMESTER.** English; Zoology; Sociology, Philosophy or Economics; Modern Dance Techniques (Women); Skills in Square and Social Dance; Sport Skills and Gymnastics; R.O.T.C. (Men)



## THE SCHOOL OF NURSING

THE SCHOOL OF NURSING OFFERS BOTH GENERAL AND FUNDAMENTAL EDUCATION for students who wish to prepare for professional nursing: (A) A generic four year college program planned for students who have no previous experience or knowledge in nursing; and (B) A program designed to bring up to full collegiate level the basic preparation of graduates of three year hospital diploma schools. Both programs lead to the degree Bachelor of Science in Nursing.

In association with the Graduate School of the University the School of Nursing prepares professional nurses who hold Bachelor of Science degree in Nursing with a "B" or better average as instructors, supervisors, and clinical specialists in medical and surgical nursing, psychiatric nursing, pediatric nursing, obstetrical nursing and Administration in Nursing Education and/or Services.

Beginning students in nursing spend the first two academic years on the College Park campus. Students from other accredited colleges may be admitted directly to the Baltimore campus providing they meet admission requirements.

Students in the graduate nurse supplementary program attend classes on either campus. Masters students take most of their work on the Professional School campus in Baltimore.

The School of Nursing is accredited by the National League for Nursing in all areas including public health nursing.

## SPECIAL FACILITIES

The facilities for instruction used by the School of Nursing include the various colleges and professional schools of the University and the University Hospital. Other facilities include the Baltimore City Health Department, Maryland State Health Department, the State Department of Mental Hygiene and Montebello State Hospital.

### TYPICAL PROGRAM FOR THE FRESHMAN YEAR

#### FIRST SEMESTER

*English*  
*Sociology*  
*Zoology*  
*Chemistry*  
*Speech*  
*Physical Activities*  
*English*

#### SECOND SEMESTER

*English*  
*Government and Politics*  
*Chemistry*  
*Speech*  
*Nursing*  
*Physical Activities*  
*Math 10 Algebra*

### RECOMMENDED PREPARATION IN HIGH SCHOOL

*English* ..... 4 years  
*Mathematics* ..... 2 years  
*History and Social Sciences* ..... 2 years  
*Foreign Language* ..... 2 years or more  
*Science* ..... 1 year  
(Biology, Chemistry or Physics)

## UNIVERSITY COLLEGE

THE PRIMARY PURPOSES OF THE COLLEGE ARE: (1) TO EXTEND THE FACILITIES of the University by offering adult educational programs in the on-campus evening division and at conveniently established off-campus centers located throughout the State of Maryland, the District of Columbia and at various overseas military centers; (2) to offer a Bachelor of Arts degree in General Studies and a Bachelor of Science degree in Military Studies to adult off-campus students; and (3) to arrange conferences, institutes and special programs for interested groups of adults.

Undergraduate and graduate courses are offered in the arts and sciences, business administration, education, military studies, and engineering. Both the Bachelor of Arts degree in General Studies and the Bachelor of Science degree in Military Studies are available through University College, and either may be completed in its entirety off-campus. Graduate courses are offered only in the State of Maryland and the District of Columbia.

The General Studies curriculum provides opportunity for programs in the areas of the social sciences, with concentrations of study in such fields as: economics, history, government and politics, sociology, geography, psychology, and commerce. The military studies curriculum is designed for armed services

personnel desiring to pursue military careers. Only persons who hold or have held a commission are eligible to complete this degree.

In addition, University College offers conferences, institutes, and special programs for interested adult groups. Many high school students who obtain employment upon graduation may avail themselves of these short-term educational opportunities.

Admission requirements for credit courses are the same off-campus as they are on-campus. Undergraduate students, who are undecided about their future plans may register in off-campus classes as special students. Graduate courses are open only to students who are fully matriculated in the Graduate School prior to the date of registration.

During the 1958-59 school year, educational programs were available at the stateside centers listed below:

Aberdeen Proving Ground	Ellicott City	Park Lawn
Andrews	Fort Holabird	Patuxent
Annapolis	Fort George G. Meade	Pentagon
Baltimore	Fort Ritchie	Prince Frederick
Bel Air	Frederick	Princess Anne
Bolling Air Force Base	Gaithersburg	Reisterstown
Bureau of Ships	Glen Burnie	Rockville
Campus (College Park)	Hagerstown	Rollingwood
Cambridge	Hughesville	Salisbury
Centreville	La Plata	Silver Spring
Chestertown	Maryland Penitentiary	Snow Hill
Cumberland	Marley	Suitland
David Taylor Model Basin	Metropolitan Police	Towson
Denton	Montgomery Blair	Viers Mill
District Heights	National Bureau of Standards	Walter Reed
Dundalk	Naval Ordnance Laboratory	Westinghouse
Easton	Naval Research Laboratory	Woodlin
Edgewood Army Chemical Center	Oakland	

For further information, see the University College catalog which may be obtained by writing the Dean, University College, University of Maryland, College Park, Maryland.





# APPENDIX A

## FEES AND EXPENSES

EFFECTIVE JULY 1, 1960

### GENERAL

All checks or money orders should be made payable to the University of Maryland for the exact amount of the charges. In cases where students have been awarded General Assembly Grants or University Grants, the amount of such grants will be deducted from the bill.

All fees are due and payable at the time of registration, and students should come prepared to pay the full amount of the charges. No student will be admitted to classes until such payment has been made.

The University reserves the right to make such changes in fees and other charges as may be found necessary, although every effort will be made to keep the cost to the student as low as possible.

No degree will be conferred, nor any diploma, certificate, or transcript of record issued to a student who has not made satisfactory settlement of his account.

### EXPLANATION OF FEES

The application fee for the undergraduate colleges and the summer session partially defrays the cost of processing applications for admission to these divisions of the University. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee. Applicants who have enrolled with the University of Maryland in its Evening Division at College Park or Baltimore, or at one of its off-campus centers are not required to pay the fee since they have already paid a matriculation fee.

The Fixed Charges Fee is not a charge for tuition. It is a charge to help defray the cost of operating the University's physical plant, to pay administrative and clerical expenses and other costs which ordinarily would not be included as a cost of teaching personnel and teaching supplies.

The Instructional Materials Fee represents the average of laboratory fees assigned to full-time undergraduate students. Graduate students, part-time undergraduate students and students enrolled in University College and the Summer School will be billed for individual laboratory fees, and not the Instructional Materials Fee. Full-time undergraduate students subject to the fees set forth below will be billed the appropriate fee and also will be billed the Instructional Materials Fee: Math. 0 and Math. 1, \$30.; Prac. Tech., \$30.; Applied Music, \$40.; and P. E. 8 Riding Class, \$26.

The Athletic Fee is charged for the support of the Department of Intercollegiate Athletics. All students are eligible and all students are encouraged to participate in all of the activities of this department and to attend all contests in which they do not participate.

The Special Fee is used to pay interest on and amortize the cost of construction of the Student Union Building, the Activities Building, and the Swimming Pool.

The Student Activities Fee is a mandatory fee included at the request of the Student Government Association. It covers subscription to the *Diamondback*, student newspaper; the *Old Line*, literary magazine; the *Terrapin*, yearbook; class dues; and includes financial support for the musical and dramatic clubs and a cultural entertainment series.

The Infirmary Fee is charged for the support of the Student Health Service, but does not include expensive drugs or special diagnostic procedures. Expensive drugs will be charged at cost and special diagnostic procedures, such as X-ray, electro-cardiographs, basal metabolic rates, etc., will be charged at the lowest cost prevailing in the vicinity.

Full-time undergraduate students who register for the second semester but who were not full-time undergraduate students in the first semester are required to pay the following additional fees: Athletic, \$7.50; Student Activities, \$8.00; Special, \$10.00; Recreational Facilities Fee, \$10.00; Infirmary, \$2.50; Advisory and Testing, \$5.00.

The Recreational Facilities Fee is paid into a fund which will be used to expand the recreational facilities on the College Park campus, especially the Student Union Building.

The Advisory and Testing Fee is charged to cover partially the cost of the University Counseling Center and the Freshman Testing Program.



## DEFINITION OF RESIDENCE AND NON-RESIDENCE

Students who are minors are considered to be resident students if at the time of their registration their parents have been domiciled in the State of Maryland for at least one year.

The status of the residence of a student is determined at the time of his first registration in the University and may not thereafter be changed by him unless, in the case of a minor, his parents move to and become legal residents of Maryland by maintaining such residence for at least one full year. However, the right of the minor student to change from a non-resident status to resident status must be established by him prior to the registration period set for any semester.

Adult students are considered to be residents if at the time of their registration they have been domiciled in Maryland for at least one year provided such residence has not been acquired while attending any school or college in Maryland or elsewhere. *Time spent on active duty in the armed services while stationed in Maryland will not be considered as satisfying the one year period referred to above except in those cases in which the adult was domiciled in Maryland for at least one year prior to his entrance into the armed service and was not enrolled in any school during that period.*

The word "domicile" as used in this regulation shall mean the permanent place of abode. For the purpose of this rule only one domicile may be maintained.

## FEES FOR RESIDENTS AND NON-RESIDENTS—EFFECTIVE JULY 1, 1960

### FEES FOR UNDERGRADUATE STUDENTS:

MARYLAND RESIDENTS	First Semester	Second Semester	Total
Fixed Charges.....	\$ 92.00	\$ 93.00	\$185.00
Instructional Materials.....	12.00	12.00	24.00
Athletic Fee.....	15.00	....	15.00
Student Activities Fee.....	12.00	....	12.00
Special Fee.....	20.00	....	20.00
Recreational Facilities Fee.....	20.00	....	20.00
Infirmery Fee.....	5.00	....	5.00
Advisory and Testing Fee.....	5.00	....	5.00
	<u>\$181.00</u>	<u>\$105.00</u>	<u>\$286.00</u>
RESIDENTS OF THE DISTRICT OF COLUMBIA, OTHER STATES AND COUNTRIES	Semester	Semester	Total
Tuition Fee for Non-Resident Students.....	\$150.00	\$150.00	\$300.00
Total for Non-Resident Students.....	<u>\$331.00</u>	<u>\$255.00</u>	<u>\$586.00</u>

### BOARD AND LODGING

Board.....	\$200.00	\$200.00	\$400.00
Dormitory Room:			
Maryland Residents.....	85-100	85-100	170-200
Other States and Countries.....	110-125	110-125	220-250

The above fees do not apply to the temporary Veteran's Housing Units. The rates for these family units are as follows: two-room apartment \$40 per month; three-room apartment \$43 per month.

### SPECIAL FEES

Application Fee (see "Explanation of Fees," preceding page).....	\$ 10.00
Matriculation Fee.....	10.00
Graduation Fee for Bachelor's degree.....	10.00
Special Fee for students requiring additional preparation in Mathematics, per semester (Required of students whose curriculum calls for Math. 5, 10 or 18 and who fail in qualifying examination for these courses.).....	30.00
Special Guidance Fee per semester (for students who are required or who wish to take advantage of the effective study course, and/or the tutoring service offered by the Office of Intermediate Registration).....	15.00
Room Key Deposit (A room key deposit is payable upon initial entry to the dormitories. Upon return of the key, a refund will be made whenever the student does not plan to re-enter the dormitories the next succeeding semester.).....	1.00

Fees for Auditors are exactly the same as fees charged to students registered for credit, with the exception that the non-resident fee will not be charged in the case of students not registering for credit in any courses.

## LABORATORY AND OTHER FEES

Paid by all students except full-time undergraduate students who are assessed the Instructional Materials Fee.

### LABORATORY FEES PER SEMESTER COURSE:

Agricultural Engineering.....	\$ 3.00	Horticulture.....	5.00
Botany.....	6.00 and 10.00	Industrial Education.....	5.00 and 7.50
Business Administration.....	7.50 and 10.00	Mechanical Engineering.....	3.00
Journalism.....	3.00 and 6.00	Microbiology.....	11.00 and 20.00
Statistics.....	3.50	Physical Activities Courses.....	6.00
Chemical Engineering.....	8.00 and 10.00	Physics—	
Chemistry.....	10.00 and 20.00	Lecture Demonstration.....	2.00 and 3.00
Education (depending on Laboratory).....	1.00, 2.00, 3.00, 5.00	Introductory.....	3.00
Dairy.....	3.00	All Other.....	10.00
Electrical Engineering.....	4.00	Psychology.....	4.00
Entomology.....	3.00	Office Techniques and Management.....	7.50 and 10.00
Home Economics—		Speech (depending on Laboratory).....	1.00, 2.00, 3.00, 7.50 and 10.00
Practical Art, Crafts, Textiles and Clothing.....	3.00	Radio and Stage Craft.....	2.00
Food and Home Management, each.....	3.00, 7.00 and 10.00	Zoology.....	8.00

### MISCELLANEOUS FEES AND CHARGES

Fee for part-time student per credit hour.....	12.00
(The term "part-time students" is interpreted to mean undergraduate students taking 6 semester credit hours or less. Students carrying more than 6 semester hours are considered to be full time and must pay the regular full-time fees.)	
Late Registration Fee.....	5.00
(All students are expected to complete their registration, including the filing of class cards and payment of bills, on the regular registration days. Those who do not complete their registration during the prescribed days must pay this fee.)	
Fee for change in registration.....	3.00
Fee for failure to report for medical examination appointment.....	2.00
Special Examination Fee—to establish college credit—per semester hour.....	5.00
Makeup Examination Fee (for students who are absent during any class period when tests or examinations are given).....	1.00
Transcript of Record Fee (one transcript furnished without charge).....	1.00
Property Damage Charge: Students will be charged for damage to property or equipment. Where responsibility for the damage can be fixed, the individual student will be billed for it; where responsibility cannot be fixed, the cost of repairing the damage or replacing equipment will be prorated.	
Library Charges:	
Fine for failure to return book from General Library before expiration of loan period.....	per day .05
Fine for failure to return book from Reserve Shelf before expiration of loan period:	
First hour overdue.....	.25
Each additional hour overdue.....	.05
In case of loss or mutilation of a book, satisfactory restitution must be made.	
In the event it becomes necessary to transfer uncollected charges to the Cashier's office, an additional charge of \$1.00 is made.	

### TEXTBOOKS AND SUPPLIES

Textbooks and classroom supplies: These costs vary with the course pursued, but will average per semester.....	35.00
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### FEES FOR GRADUATE STUDENTS

Fee for student carrying 10 or more semester credit hours.....	120.00
Fee per semester hour for students carrying less than 10 semester credit hours.....	12.00
Matriculation Fee, payable only once, at time of first registration.....	10.00
Graduation Fee for Master's Degree.....	10.00
Graduation Fee for Doctor's Degree.....	50.00
Infirmity Fee (voluntary).....	5.00
Foreign Language examination (first examination without charge).....	5.00
Testing Fee (Education Majors).....	5.00

NOTES: Fees in the Graduate School are the same for all students, whether or not they are residents of the State of Maryland.  
 All fees, except Diploma Fee and Graduation Fee, are payable at the time of registration for each semester.  
 Graduation Fee must be paid prior to graduation.  
 No provision for housing students is made by the University.  
 The Infirmary services normally furnished the undergraduate students are available to graduate students who elect to pay the fee of \$5.00 for the year (not including Summer School), provided that the fee is paid not later than the end of the first week of classes in the regular academic session. A graduate student entering in February may benefit in the same manner by the payment of \$2.50.

FEEES FOR OFF-CAMPUS COURSES

Matriculation Fee (payable once, at time of first registration by all students—full time and part time, candidates for degrees, and non-candidates):  
 For Undergraduates..... 10.00  
 For Graduates..... 10.00  
 Fee for all students—limit 6 hours. For exceptional adult students taking off-campus courses the limit may be increased to 9 hours. Charge per credit hour..... 12.00  
 Laboratory Fees: A laboratory fee, to cover cost of materials used, is charged in laboratory courses. Fees vary with the course and can be ascertained in any case by inquiry to the Dean of University College.

WITHDRAWAL AND REFUND OF FEES

Any student compelled to leave the University at any time during the academic year should file an application for withdrawal, bearing the proper signatures, in the Office of the Registrar. If this is not done, the student will not be entitled, as a matter of course, to a certificate of honorable dismissal, and will forfeit his right to any refund to which he would otherwise be entitled. The date used in computing refunds is the date the application for withdrawal is filed in the Office of the Registrar.

In the case of a minor, withdrawal will be permitted only with the written consent of the student's parent or guardian.

Students withdrawing from the University will be credited for all fees charged to them except the Application Fee, the Matriculation Fee and board in accordance with the following schedule:

<i>Period from Date Instruction Begins</i>	<i>Refundable</i>
Two weeks or less.....	80%
Between two and three weeks.....	60%
Between three and four weeks.....	40%
Between four and five weeks.....	20%
Over five weeks.....	0

The Application Fee and the Matriculation Fee are not returnable in any instance.

Board is refunded only in the event the student withdraws from the University. Refunds of board are made on a pro-rata, weekly basis. Dining Hall cards issued to boarding students must be surrendered at the Auditor's Office in the Administration Building on the day of withdrawal, before any refund will be processed.

In computing refunds to students who have received the benefit of scholarships and loans from University Funds, the computation will be made in such a way as to return the maximum amount to the scholarship and loan accounts without loss to the University.

No refund of the Athletic, Student Activity, Special Recreational Facilities, Infirmary, and Advisory and Testing Fees is made to students who withdraw at the close of the first semester.

No refunds of Fixed Charges, Lodging, Tuition, Laboratory Fees, Instructional Materials Fee, etc., are allowed when courses are dropped, unless the student withdraws from the University.

When regularly enrolled part-time students in off-campus instruction officially drop a course or courses and continue with one or more courses, they may receive a refund of 80% for the dropped courses if they are officially dropped prior to the third meeting of the class or classes.

TRANSCRIPTS OF RECORDS

Students and alumni may secure transcripts of their scholastic records from the Office of the Registrar. No charge is made for the first copy; for additional copies, there is a charge of \$1.00 for each transcript, except when more than one copy is requested at the same time. In that case, one dollar is charged for the first copy, and fifty cents for each additional copy. Checks should be made payable to the University of Maryland. Transcripts of records should be requested at least one week in advance of the date when the records are actually needed. No transcript of a student's record will be furnished any student or alumnus whose financial obligations to the University have not been satisfied.

## APPENDIX B

### HONORS, AWARDS, SCHOLARSHIPS AND GRANTS-IN-AID

#### HONORS, AWARDS

**SCHOLARSHIP HONORS**—Final honors for excellence in scholarship are awarded to one-fifth of the graduating class in each College. *First honors* are awarded to the upper half of this group; *second honors* to the lower half. To be eligible for honors, a student must complete at least two years of resident work at the University with an average of B (3.0) or higher.

**ALPHA CHI SIGMA AWARD**—The Alpha Rho Chapter of the Alpha Chi Sigma Honorary Fraternity offers annually a year's membership in the American Chemical Society to the senior majoring in Chemistry or Chemical Engineering whose average has been above 3.0 for three and one-half years.

**ALPHA LAMBDA DELTA SENIOR CERTIFICATE AWARD**—Senior members of Alpha Lambda Delta, honorary scholastic society for women, who have maintained an average of 3.5, receive this certificate.

**ALPHA ZETA MEDAL**—The Professional Agricultural Fraternity of Alpha Zeta awards annually a medal to the agricultural student in the freshman class who attains the highest average record in academic work.

**AMERICAN ASSOCIATION OF UNIVERSITY WOMEN AWARD**—This award is presented to a senior woman selected for scholarship and community leadership.

**AMERICAN INSTITUTE OF CHEMICAL ENGINEERS AWARD**—A certificate, pin, and magazine subscription are awarded to the junior member of the Student Chapter who attained the highest overall scholastic average during his freshman and sophomore years.

**AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS AWARD**—The Washington Section of the American Institute of Electrical Engineers defrays the expenses of a year's membership as an associate in the Institute for the senior doing the most to promote Student Branch activities.

**AMERICAN SOCIETY OF CIVIL ENGINEERS AWARD**—The Maryland Section of the American Society of Civil Engineers awards annually the first year's dues of an associate membership in the Society to a senior member of the Student Chapter on recommendation of the faculty of the Department of Civil Engineering.

**APPLEMAN-NORTON AWARD IN BOTANY**—The Department of Botany offers a scholarship award of \$100 in honor of Emeritus Professors C. O. Appleman and J. B. S. Norton to a senior major in Botany who is considered worthy on the basis of demonstrated ability and excellence in scholarship. The scholarship is awarded by the Committee on Scholarships upon the recommendation of a committee of the faculty of the Department of Botany.

**DINAH BERMAN MEMORIAL MEDAL**—The Dinah Berman Memorial Medal is awarded annually to the sophomore who has attained the highest scholastic average of his class in the College of Engineering. The medal is given by Mr. Benjamin Berman.

**CITIZENSHIP PRIZE FOR MEN**—President Emeritus H. C. Byrd, of the Class of 1908, annually presents this award to the member of the senior class who, during his collegiate career, has most nearly typified the model citizen and who has done most for the general advancement of the interests of the University.

**CITIZENSHIP PRIZE FOR WOMEN**—This prize is presented annually as a memorial to Sally Sterling Byrd, by her children, to that member of the senior class who best exemplifies the enduring qualities of the pioneer woman. These qualities typify self dependence, courtesy, aggressiveness, modesty, capacity to achieve objectives, willingness to sacrifice for others, strength of character, and those other qualities that enabled the pioneer woman to play such a fundamental part in the building of the nation.

**CIVIL ENGINEERING HONOR SOCIETY AWARD**—A year's subscription to *Civil Engineering* is awarded annually by the Society to the outstanding civil engineering sophomore.

**BERNARD L. CROZIER AWARD**—The Maryland Association of Engineers awards a cash prize of twenty-five dollars annually to the senior in the College of Engineering who, in the opinion of the faculty, has made the greatest improvement in scholarship during his stay at the University.

**DAVIDSON TRANSFER AND STORAGE COMPANY AWARD**—A \$500.00 award is made to a high-ranking student in the College of Business and Public Administration who is concentrating in transportation. This award is made through the College of Business and Public Administration.



**DELTA DELTA DELTA MEDAL**—This sorority awards a medal annually to the woman who attains the highest average in academic work during the sophomore year.

**DELTA GAMMA SCHOLARSHIP AWARD**—This award is offered to the woman member of the graduating class who has maintained the highest average during three and one-half years at the University.

**DELTA SIGMA PI SCHOLARSHIP KEY**—This award is offered to a member of the graduating class who has maintained the highest scholastic average for the entire four-year course in the College of Business and Public Administration.

**GODDARD MEDAL**—The James Douglass Goddard Memorial Medal is awarded annually to the resident of Prince Georges County, born therein, who makes the highest average in his studies and who at the same time embodies the most manly attributes. The medal is given by Mrs. Anne G. Goddard James of Washington, D. C.

**GRANGE AWARD**—The Maryland State Grange makes an annual award to the senior who has excelled in leadership and scholastic attainment and has contributed meritorious service to the College of Agriculture.

**MAHLON N. HAINES AWARD**—An award of one hundred dollars is presented each year to the students in the Department of Fine Arts for outstanding work in the painting classes.

**CHARLES B. HALE DRAMATIC AWARDS**—The University Theatre recognizes annually the man and woman members of the senior class who have done most for the advancement of dramatics at the University.

**INSTITUTE OF AERONAUTICAL SCIENCES AWARDS**—Free memberships in the Institute for one year and cash prizes for the best paper presented at a Student Branch meeting and for the graduating aeronautical senior with the highest academic standing.

**MACHINERY'S AWARD**—For excellence in machine design, a copy of *Machinery's Handbook* and a copy of the Handbook Guide is awarded annually to a mechanical engineering senior.

**INDUSTRIAL PRESS ACHIEVEMENT AWARD**—An award by the Industrial Press Company for scholastic excellence in air conditioning, heating, and ventilation studies.

**MARYLAND MOTOR TRUCK ASSOCIATION AWARD**—A five hundred dollar award is made to a student majoring in Transportation with an interest in motor transportation who has shown in three years of training an apparent ability to succeed. This award is made through the College of Business and Public Administration.

**OMICRON NU SORORITY MEDAL**—This honorary sorority awards a medal annually to the freshman woman in the College of Home Economics who attains the highest scholastic average during the first semester.

**PHI ALPHA AWARD**—Epsilon Chapter of Phi Alpha Fraternity awards annually a plaque to the man in the junior class who has attained the highest scholastic average during his first two years at the College Park colleges of the University.

**PHI CHI THETA KEY**—The Phi Chi Theta Key is awarded to the outstanding graduating senior woman in the College of Business and Public Administration on the basis of scholarship, activities, and leadership.

**PILOT FREIGHT CARRIERS, INC., AWARD**—A five hundred dollar award is made to a senior student in the College of Business and Public Administration who has majored in transportation and who has demonstrated competence in this field of study. This award is made through the College of Business and Public Administration.

**PI SIGMA ALPHA—FRED HAYS MEMORIAL AWARD**—This award, consisting of the sum of thirty dollars, is presented by an alumnus to the senior in Government and Politics having the highest average in departmental courses.

**PI TAU SIGMA AWARD**—An annual handbook award to the most outstanding sophomore in mechanical engineering on the basis of scholastic average and instructors' ratings.

**WILLIAM S. ROSENBAUM MEMORIAL FOUNDATION AWARD**—This award, consisting of twenty-five dollars, is presented for excellence in Hebrew studies by Barbarossa Lodge 133, Knights of Pythias, Philadelphia, Pennsylvania.

**SIGMA ALPHA OMICRON AWARD**—This award is presented to a senior student majoring in Bacteriology for high scholarship, character and leadership.

**SIGMA CHI CUP**—Sigma Chi Fraternity offers annually a cup to the man in the freshman class who has made the highest scholastic average during the first semester.



**ALGERNON SYDNEY SULLIVAN AWARD**—The New York Southern Society, in memory of its first president, awards annually medallions and certificates to one man and one woman of the graduating class and one non-student who evince in their daily life a spirit of love for and helpfulness to other men and women.

**TAU BETA PI AWARD**—The Maryland Beta Chapter of Tau Beta Pi Association, national engineering honor society, awards annually an engineer's handbook to the junior in the College of Engineering who during his sophomore year has made the greatest improvement in scholarship over that of his freshman year.

**WASHINGTON PANHELLENIC ASSOCIATION AWARD**—The sum of two hundred dollars is presented to a woman student, a member of the National Panhellenic Conference Sorority, who has done most to promote social relations among the sororities on the campus.

**DAVID ARTHUR BERMAN MEMORIAL AWARD**—This award is offered by the family of David Arthur Berman to the highest ranking junior in the Department of Chemical Engineering who is also a member of Tau Beta Pi.

**HAMILTON AWARD**—This award is offered by the Hamilton Watch Company to the graduating senior in the College of Engineering who has most successfully combined proficiency in his major field of study with achievements—either academic, extra-curricular, or both—in the social sciences or humanities.

**MEN'S LEAGUE CUP**—This award is offered by the Men's League to the graduating male senior who has done the most for the male student body.

**PHI BETA KAPPA ASSOCIATION AWARD**—This award is presented to the graduating senior with the highest cumulative scholastic average whose basic course program has been in the liberal studies.

## MILITARY AWARDS

**AIR FORCE ASSOCIATION MEDAL**—This silver medal is awarded to the outstanding advanced cadet in the A.F.R.O.T.C. course who has demonstrated outstanding ability in scholastic grades, both general and military, in individual characteristics, and in performance during the period of summer camp.

**ALUMNI CUP**—The Alumni Association offers each year a cup to the Leader of the best drilled Flight in competitive drill.

**AMERICAN LEGION POST NO. 217 AWARD**—This award is presented to the senior advanced cadet who displays outstanding leadership.

**AMERICAN LEGION GOLD MEDAL**—The gold medal is awarded to the senior advanced cadet for academic achievement in leadership.

**ARMED FORCES COMMUNICATIONS MEDAL**—This medal is awarded to the senior advanced cadet in recognition of outstanding achievement in the field of electronics.

**ARNOLD AIR SOCIETY PLAQUE**—This plaque is awarded to the second year advanced cadet who has done the most to advance the A.F.R.O.T.C. interests and activities for the Arnold Air Society.

**CONSOLIDATED VULTEE AIRCRAFT CORPORATION AWARD**—This award is presented to the sophomore cadet displaying leadership ability and academic excellence.

**DISABLED AMERICAN VETERANS' GOLD CUP**—This cup is awarded to the senior advanced cadet who has displayed outstanding leadership, scholarship, and citizenship.

**DISTINGUISHED A.F.R.O.T.C. CADET AWARDS**—These awards are presented to senior cadets who have been outstanding in A.F.R.O.T.C. and who are outstanding in their academic major fields. Distinguished A.F.R.O.T.C. cadets are eligible to apply for regular Air Force commission.

**GOVERNOR'S CUP**—This cup is offered each year by His Excellency, the Governor of Maryland, to the best drilled squadron.

**HAMILL MEMORIAL PLAQUE**—This plaque, offered by the local chapter of Theta Chi Fraternity, is presented to the sophomore cadet excelling in leadership and scholarship.

**DISTINGUISHED A.F.R.O.T.C. GRADUATE**—Presented to distinguished cadets of the A.F.R.O.T.C. who continue to display outstanding academic and leadership qualities.

**A.F.R.O.T.C. ANGEL FLIGHT AWARD**—Presented to the most outstanding member of the Angel Flight.

**CHARLES H. DICKINSON MEMORIAL PLAQUE**—Offered by the Veterans Club, University of Maryland, to the Junior cadet who has shown leadership ability, outstanding individual characteristics of military bearing.

**VANDENBERG GUARD AWARD**—Presented to the member displaying most leadership ability.

**GLENN L. MARTIN AERONAUTICAL ENGINEERING AWARD**—This award is presented for academic excellence in the field of aeronautical engineering to a senior advanced cadet who has applied for flight training.

**MARYLAND STATE SOCIETY DAUGHTERS OF FOUNDERS AND PATRIOTS OF AMERICA AWARD**—This award is presented to the freshman cadet attaining the highest over-all academic grades.

**NATIONAL DEFENSE TRANSPORTATION ASSOCIATION AWARD**—This organization offers a citation in recognition of leadership qualities, academic standing, aptitude for military service, and noteworthy service in furtherance of the aims and objectives of the Association in promoting preparedness for the national defense of the United States.

**PERSHING RIFLE REGIMENTAL MEDAL**—Presented to the member of Pershing Rifles who shows outstanding service to the company.

**PERSHING RIFLE AWARDS**—The Pershing Rifle Company presents medals to most outstanding basic cadets who are members of the Pershing Rifles.

**PERSHING RIFLE AWARD**—Medal presented by Pershing Rifle Company to the best drilled cadet of the corps who is not a member of Pershing Rifles.

**PERSHING RIFLE MEDAL**—This medal is awarded to the outstanding member of the Pershing Rifles.

**RESERVE OFFICERS' ASSOCIATION MEDALS**—Three medals, gold, silver, and bronze, are presented by this association to the three senior cadets demonstrating outstanding academic achievement in the A.F.R.O.T.C. and in other studies.

**RESERVE OFFICERS' ASSOCIATION RIBBONS**—The Air Force Reserve Officers Association presents ribbons to the 40 outstanding freshman cadets, the 30 outstanding sophomore cadets, and to 10 outstanding Juniors.

**SCABBARD AND BLADE COBLENTZ MEMORIAL CUP**—This cup awarded to the Commander of the winning Squadron in drill competition.

**SONS OF THE AMERICAN REVOLUTION AWARD**—This award is presented to the senior Advanced Cadet who exhibits in his work a high degree of merit with respect to leadership, military bearing, and excellence in his academic course of study.

**SUN NEWSPAPER AWARD**—This award is presented to a basic cadet in recognition of being the best drilled basic cadet in competitive drill.

## ATHLETIC AWARDS

**TOM BIRMINGHAM MEMORIAL TROPHY**—This trophy presented by Major Benny Alperstein and Major Hotsy Alperstein in memory of the late Tom Birmingham, of the Class of 1937, is awarded to the outstanding member of the boxing team.

**WILLIAM P. COLE, III, MEMORIAL LACROSSE AWARD**—This award, offered by the teammates of William P. Cole, III and the coaches of the 1940 National Champion team, is presented to the outstanding midfielder.

**HERBERT H. GOODMAN TROPHY**—This trophy is offered by Herbert H. Goodman to the most outstanding wrestler of the year.

**JOE DECKMAN-SAM SILBER TROPHY**—This trophy is offered by Joseph H. Deckman and Samuel L. Silber to the most improved defense lacrosse player.

**HALBERT K. EVANS MEMORIAL TRACK AWARD**—This award, given in memory of "Hermie" Evans, of the Class of 1940, by his friends, is presented to the outstanding graduating senior trackman.

**CHARLES LEROY MACKERT TROPHY**—This trophy is offered by William E. Krouse to the Maryland student who has contributed most to wrestling while at the University.

**MARYLAND RING**—The Maryland Ring is offered as a memorial to Charles L. Linhardt, of the Class of 1912, to the Maryland man who is adjudged the best athlete of the year.

**CHARLES P. MC CORMICK TROPHY**—This trophy is offered by Charles P. McCormick to the senior letterman who has contributed most to swimming during his collegiate career.

**ANTHONY C. NARDO MEMORIAL TROPHY**—This trophy is awarded to the best football lineman of the year.

**EDWIN POWELL TROPHY**—This trophy is offered by the Class of 1913 to the player who has rendered the greatest service to lacrosse during the year.

**SILVESTER WATCH FOR EXCELLENCE IN ATHLETICS**—A gold watch, given in honor of former president of the University, R. W. Silvester, is offered annually to "the man who typifies the best in college athletics."

**TEKE TROPHY**—This trophy is offered by the Maryland Chapter of Tau Kappa Epsilon Fraternity to the student who during his four years at the University has rendered the greatest service to football.

**ROBERT E. THEOFELD MEMORIAL**—This trophy is presented by Dr. and Mrs. Harry S. Hoffman and is awarded to the golfer who most nearly exemplifies the competitive spirit and strong character of Robert E. Theofeld, a former member of the boxing team.

**DIXIE WALKER MEMORIAL TROPHY**—This trophy, offered by Theta Chi Fraternity, is awarded to the boxer who has shown the most improvement over his performance in preceding years.

**THE ALVIN L. AUBINOE BASKETBALL TROPHY**—This trophy is offered by Alvin L. Aubinoe for the senior who has contributed most to the squad.

**THE ALVIN L. AUBINOE FOOTBALL TROPHY**—This trophy is offered by Alvin L. Aubinoe for the unsung hero of the current season.

**THE ALVIN L. AUBINOE TRACK TROPHY**—This trophy is offered by Alvin L. Aubinoe for the senior who has contributed most to the squad during the time he was on the squad.

## STUDENT GOVERNMENT AWARDS

Keys are awarded to the members of the Executive Committee of the Student Government Association, Men's League, Association of Women Students, and other organizations who faithfully perform their duties throughout the year.

## SCHOLARSHIPS AND GRANTS-IN-AID

All requests for information concerning scholarships and grants-in-aid should be addressed to the Director of the Office of Scholarships and Grants-in-Aid, University of Maryland, College Park, Maryland. Regulations and procedures for the award of scholarships are formulated by this committee.

The Board of Regents of the University authorizes the award of a limited number of scholarships each year to deserving students. All scholarships and grants for the undergraduate departments of the University at College Park are awarded by a faculty committee. Applicants are subject to the approval of the Director of Admissions insofar as qualifications for admission to the University are concerned. All recipients are subject to the academic and non-academic regulations and requirements of the University.

Scholarships and grants are awarded to young men and women based upon apparent academic ability and financial need. In making awards, consideration is given to character, achievement, participation in student activities and to other attributes which may indicate success in college. It is the intent of the Committee to make awards to those qualified who might not otherwise be able to provide for themselves an opportunity for higher education.

The recipient of a scholarship or a grant is expected to make at least normal progress toward a degree. Normal progress toward a degree is defined by the Academic Probation Plan.

The Committee on Scholarships and Grants-in-Aid reserves the right to review the scholarship program annually and to make adjustments in the amounts and recipients of awards in accordance with the funds available and scholastic attainment.

The types of scholarships, grants and loan funds available follow:

### FULL SCHOLARSHIPS

The University awards fifty-six full scholarships covering board, lodging, fixed charges, fees and books. Not more than twenty of these scholarships may be held by out-of-state students and at least twelve are reserved for women. Scholastic achievement and participation in student activities are given primary consideration in the award of these scholarships.

### UNIVERSITY GRANTS

The University awards to deserving and qualified secondary school graduates a limited number of grants covering fixed charges only.

### GENERAL ASSEMBLY GRANTS

These grants are for fixed charges and are awarded by members of the Legislature, three for each Senator and one for each member of the House of Delegates. They may be awarded by a member of the House of Delegates or by a Senator only to persons in the county or in the legislative district of Baltimore City which the Delegate or Senator represents. Awards of such grants are subject to approval by the Committee on Scholarships and by the Director of Admissions as to qualifications for admission.

#### SPECIAL ACADEMIC SCHOLARSHIPS

A limited number of scholarships is awarded each year to students of exceptional academic ability out of funds derived from campus enterprises. The amount of these scholarships varies depending upon the extent of need. These awards are made by the Committee on Scholarships and Grants-in-Aid in accordance with the general principles underlying the award of all other scholarships.

#### ENDOWED SCHOLARSHIPS AND GRANTS

The University has a number of endowed scholarships and special grants. These are paid for by income from funds especially established for this purpose. Brief descriptions of these awards follow:

**ALBRIGHT SCHOLARSHIP**—The Victor E. Albright Scholarship is open to graduates of Garrett County high schools who were born and reared in that county. Application should be made to the high school principals.

**ALUMNI SCHOLARSHIPS**—The General Alumni Council of the University Alumni Association provides eleven scholarships in the amount of \$250 each to be awarded respectively to schools or colleges represented on the Alumni Council. The awards are based on scholarship, leadership and need and are awarded by the Faculty Committee on Scholarships and Grants-in-Aid.

**ALVIN L. AUBINOE STUDENT AID PROGRAM**—Scholarship grants up to \$500 per school year to students in engineering, preferably those studying for careers in civil engineering, architecture or light construction.

**AMERICAN SOCIETY FOR METALS SCHOLARSHIP IN METALLURGY**—A scholarship of \$500 is available to a competent student in the field of Metallurgy. The award will be made by the faculty in Metallurgy in accordance with the general principles underlying the award of all scholarships in the University.

**BALTIMORE PANHELLENIC ASSOCIATION SCHOLARSHIP**—A scholarship is awarded annually by the Baltimore Panhellenic Association. This scholarship will be awarded to a student entering the junior or senior class, who is an active member of a sorority, who is outstanding in leadership and scholarship and who needs financial assistance. This award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the Office of the Dean of Women.

**BALTIMORE SUNPAPERS SCHOLARSHIP IN JOURNALISM**—The Board of Trustees of the A. S. Abell Foundation, Inc., has contributed \$500 to provide a scholarship in journalism to be awarded to a worthy senior in the College of Business and Public Administration who is majoring in Editorial Journalism.

**SAMUEL WOLFE BLANKMAN GRANT**—The sum of \$100 is awarded each year to a foreign student on the basis of worth and need to be determined by the Committee on Scholarships. The student must be a permanent resident of a country other than the United States, its possessions, or Canada. He may be a member of any college or school in the University.

**BORDEN AGRICULTURAL AND HOME ECONOMICS SCHOLARSHIPS**—A Borden Agricultural Scholarship of \$300 is granted to that student in the College of Agriculture who has had two or more of the regularly listed courses in dairying and who, upon entering the senior year of study, has achieved the highest average grade of all other similarly eligible students in all preceding college work.

A Borden Home Economics Scholarship of \$300 is granted to that student in the College of Home Economics who has had two or more of the regularly listed courses in foods and nutrition and who, upon entering the senior year of study, has achieved the highest average grade of all other similarly eligible students in all preceding college work.

**CAPITAL FARM AND GARDEN SCHOLARSHIP**—This scholarship of \$400 per year is made available by the Capital Division of the Women's National Farm and Garden Association, Inc. to help rural girls and women through scholarships and guidance to the best training in agriculture, horticulture, home economics and the related professions. This scholarship is awarded by the Committee on Scholarships and Grants-in-Aid in accordance with terms of the grant.

**WILLIAM F. CHILDS, JR., GRANT**—The Maryland Highways Contractors Association provides a grant of \$500 annually to be awarded to a capable and worthy senior in the Department of Civil Engineering who plans to enter the field of Highway Engineering upon graduation. The award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Engineering.

**DR. ERNEST N. CORY SCHOLARSHIP**—This award is made annually to an outstanding junior or senior in the College of Agriculture, preferably one majoring in Entomology. The amount of the award will vary depending upon the earnings of a trust fund established in honor of Dr. Ernest N. Cory upon his retirement. The Committee on Scholarships and Grants-in-Aid cooperates with the College of Agriculture in selecting the student for this award.

**THE DANFORTH FOUNDATION AND THE RALSTON PURINA SCHOLARSHIPS**—The Danforth Foundation and the Ralston Purina Company of St. Louis offer two summer scholarships to outstanding men students in the College of Agriculture, one for a student who has successfully completed his junior year, the other for a student who has successfully completed his freshman year. The purpose of these scholarships is to bring together outstanding young men for leadership training.



The Danforth Foundation and the Ralston Purina Company of St. Louis offer two summer scholarships to outstanding Home Economics women students, one to a junior and one to a freshman. The purpose of these scholarships is to bring together outstanding young women for leadership training.

**DAIRY TECHNOLOGY SCHOLARSHIPS AND GRANTS**—The Dairy Technology Society of Maryland and the District of Columbia provides a limited number of scholarships and grants-in-aid for students majoring in Dairy Products Technology. These awards are available both to high school graduates entering the University as freshmen and to students who have completed one or more years of their University curriculum. The purpose of these awards is to encourage and stimulate interest in the field of milk and milk products. The awards are based on scholarship, leadership, personality, need, experience, interest in and willingness to work in the field of dairy technology. These awards are made by the Committee on Scholarships and Grants-in-Aid in cooperation with the Dairy Technology Society.

**DOUGLAS AIRCRAFT COMPANY SCHOLARSHIP**—A scholarship in the amount of \$800 is awarded to an outstanding and deserving senior student in aeronautical, mechanical or electrical engineering in this order of preference. The recipient must be a citizen of the United States and indicate a willingness to accept employment in California.

**EXEL SCHOLARSHIPS**—A substantial grant for endowed scholarships was made by Deborah B. Exel. These awards are made by the Committee on Scholarships to worthy students in accordance with the general principles underlying the award of all other scholarships.

**ANNE ARUNDEL COUNTY VOLUNTEER FIREMEN'S ASSOCIATION GRANT**—This grant is awarded to a high school graduate who will enroll in the Fire Protection Curriculum in the College of Engineering. The amount of the award is \$300 per year and will be available to the recipient for the normal period of time to complete the program being pursued. This grant is awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the Anne Arundel County Volunteer Fireman's Association and the College of Engineering.

**LADIES AUXILIARY TO THE MARYLAND STATE FIREMEN'S ASSOCIATION GRANT**—This grant is awarded to an outstanding high school graduate who will enroll in the Fire Protection Curriculum in the College of Engineering. The amount of this award is \$500 per year and will be available to the recipient for the normal period of time to complete the program being pursued. This grant is awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the Ladies Auxiliary to the Maryland State Firemen's Association and the College of Engineering.

**MARYLAND STATE FIREMEN'S ASSOCIATION GRANT**—A \$300 scholarship is awarded annually to an outstanding high school student who enrolls in the Fire Protection Curriculum of the College of Engineering. This scholarship is for four years and is awarded to a student of high scholastic ability with a reputation of good character and outstanding fire service interest. The award is made by the Faculty Committee on Scholarships in cooperation with the Maryland State Firemen's Association and the Fire Protection Department of the College of Engineering.

**PRINCE GEORGES COUNTY VOLUNTEER FIREMEN'S ASSOCIATION GRANT**—An annual scholarship of \$300 is awarded to an outstanding high school student who enrolls in the Fire Protection Curriculum of the College of Engineering. The award is based on high scholastic ability, good character and outstanding fire service interest. The Faculty Committee on Scholarships and Grants-in-Aid cooperates with the Fire Protection Department of the College of Engineering and the Board of Directors of the Prince Georges County Volunteer Firemen's Association in selecting the student.

**FOOD FAIR STORES FOUNDATION SCHOLARSHIPS**—Each year a number of scholarships is made available by the Food Fair Stores Foundation to students from Anne Arundel, Baltimore, Frederick, Montgomery, and Talbot counties and Baltimore City. Students receiving these scholarships may pursue any of the four-year curriculums of the University. The scholarships are for \$250 for an academic year and are awarded by the Committee on Scholarships as in the case of all other scholarships. Under certain conditions they may be granted from year to year.

**VICTOR FRENKIL SCHOLARSHIP**—A scholarship of \$250 is granted annually by Mr. Victor Frenkil of Baltimore to a student from Baltimore City in the freshman class of the University. This scholarship is awarded in cooperation with the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

**GENERAL MOTORS SCHOLARSHIP**—This scholarship is granted annually to any young man or young woman who is an outstanding individual entering the freshman year. The scholarship is awarded by the Committee on Scholarships. The amount of the stipend depends upon the demonstrated need of the individual. The Sponsored Scholarship Service evaluates the financial need in each case.

**GODDARD MEMORIAL SCHOLARSHIPS**—Four \$500 scholarships are available annually under the terms of the James and Sarah E. R. Goddard Memorial Fund established through the wills of Morgan E. Goddard and Mary Y. Goddard. In granting these awards the Committee on Scholarships will consider outstanding scholastic achievement and financial need. Each award will be made on a year-to-year basis depending upon the accomplishment of the student.



**WILLIAM RANDOLPH HEARST FOUNDATION SCHOLARSHIPS**—These scholarships are made available through a gift of the Baltimore News-Post, one of the Hearst newspapers, in honor of William Randolph Hearst. Scholarships up to \$500 are awarded annually to undergraduates pursuing a program of study in journalism. Scholarships up to \$1,000 are awarded annually for graduate study in history. These scholarships are awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the Departments of History and Journalism.

**IOTA LAMBDA SIGMA (NU CHAPTER) SCHOLARSHIP**—This scholarship is awarded annually to any outstanding male freshman student who enrolls in the Industrial Education curriculum. The student must be a resident of the State of Maryland and signify his intention of teaching in Maryland.

**VENIA M. KELLER GRANT**—The Maryland State Council of Homemakers' Clubs makes available this grant of \$100 which is open to a Maryland young man or woman of promise who wishes to enroll or is enrolled in the College of Home Economics. It is awarded through the College of Home Economics in cooperation with the Committee on Scholarships.

**KIWANIS SCHOLARSHIP**—A Kiwanis Memorial Scholarship of \$200 per year is awarded by the Prince Georges County Kiwanis Club to a male resident of Prince Georges County, Maryland, who, in addition to possessing the necessary qualifications for maintaining a satisfactory scholarship record, must have a reputation of high character and attainment in general all-around citizenship.

**HELEN ALETTA LINTHICUM SCHOLARSHIPS**—These scholarships, several in number, were established through the benefaction of the late Mrs. Helen Aletta Linthicum, widow of the late Congressman Charles J. Linthicum, who served in Congress from the Fourth District of Maryland for many years. They are granted to worthy young men and women who are residents of the State of Maryland and who have satisfactory high school records, forceful personality, a reputation for splendid character and citizenship, and the determination to get ahead.

**THE M CLUB GRANTS**—The M Club of the University of Maryland provides each year a limited number of awards. They are granted by the Committee on Scholarships to applicants who show promise in sports other than football.

**DR. FRANK C. MARINO SCHOLARSHIP**—Dr. Frank C. Marino provides a \$200 annual scholarship in Nursing Education. As vacancies in this scholarship occur, it is awarded by the Committee on Scholarships to a student who demonstrates special interest and promise in this field.

**MARYLAND ASSOCIATION OF CERTIFIED PUBLIC ACCOUNTANTS SCHOLARSHIP**—A \$200 scholarship is awarded to a superior student in the College of Business and Public Administration who is concentrating in Accounting. This award is made through the College of Business and Public Administration in cooperation with the Committee on Scholarships.

**MARYLAND EDUCATIONAL FOUNDATION GRANTS**—The Maryland Educational Foundation provides funds each year for the education of several promising young men. These grants are awarded by the Committee on Scholarships to applicants who qualify under the provisions of the Foundation.

**EUGENE E. AND AGNES E. MEYER SCHOLARSHIPS**—A number of scholarships is made available each year to promising students in meeting the costs of furthering their education, with preferential consideration to children of persons employed in public service, including service in the armed forces and the judiciary. The awards are made by the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

**MILLER CHEMICAL AND FERTILIZER CORPORATION SCHOLARSHIP**—A \$250 scholarship has been made available for a student who needs financial aid, who has a farm background, and who has a major in Entomology, Plant Pathology, Agronomy, or Horticulture. The award is made by the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

**MORTAR BOARD SCHOLARSHIP**—The Mortar Board Scholarship is awarded annually to a woman student on the basis of scholastic attainment, character, and need. The selection of the student for this award is made through the Office of the Dean of Women and a representative of Mortar Board in cooperation with the Committee on Scholarships in accordance with the general principles underlying the award of all other scholarships.

**PANHellenic ASSOCIATION OF WASHINGTON, D. C., SCHOLARSHIP**—A \$300 scholarship is awarded annually by the Panhellenic Association of Washington, D.C. This award is made to a member of a national Panhellenic Conference Sorority who in her sophomore or junior year has had a 3.0 average or better, who has done the most to promote good social relations among the sororities on the campus, and who is an outstanding leader in student affairs sponsored by the University. The award is made by the Committee on Scholarships in terms of the provisions of the grant.

**PENINSULA HORTICULTURAL SOCIETY SCHOLARSHIP**—The Peninsula Horticultural Society provides annually a \$200 scholarship to the most deserving junior or senior student, a resident of Maryland from the Eastern Shore counties, who is majoring in Horticulture or related subjects, particularly as they apply to the culture of fruits and vegetables. The award is made in cooperation with the Committee on Scholarships.

**PHI BETA KAPPA SCHOLARSHIP**—A \$250 scholarship is awarded to the student who at the end of the junior year has attained the highest cumulative average and whose basic course program has been in liberal studies.

**THE PRICE WATERHOUSE FOUNDATION SCHOLARSHIPS**—The Price Waterhouse Foundation offers two \$500 scholarships to exceptional senior students concentrating in accounting who are registered in the College of Business and Public Administration. The award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Business and Public Administration.

**THE SEARS ROEBUCK FOUNDATION GRANTS**—Ten grants of \$200 each are provided by the Sears Roebuck Foundation to the sons of Maryland farmers who enroll in the freshman class of the College of Agriculture. One \$250 grant is awarded each year to the sophomore student in the College of Agriculture who has proved to be the outstanding student holding a Sears Roebuck grant during the previous year. These grants are awarded annually by the Committee on Scholarships.

A limited number of similar grants from the Sears Roebuck Foundation is also available for students in the College of Home Economics.

**SOUTHERN STATES COOPERATIVE SCHOLARSHIPS**—Two scholarships are awarded each year to sons of Southern States members—one for outstanding work in 4-H Club and the other for outstanding work in FFA. The amount of each scholarship is \$300 per year and will continue for four years. These scholarships are awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Agriculture.

**JANIE G. S. TALIAFERRO SCHOLARSHIP**—Under the terms of the will of the late Janie G. S. Taliaferro a bequest has been made to the University of Maryland to provide scholarship aid to worthy students. The income of the estate amounting to \$350 annually is used as a scholarship to a worthy young man or young woman who qualifies. The award is made by the Committee on Scholarships and Grants-in-Aid in accordance with the general principles underlying the award of all other scholarships.

**J. MCKENNY WILLIS AND SON GRANT**—A grant of \$500 is made available annually by J. McKenny Willis and Son, Inc., Grain, Feed and Seed Company of Easton, Maryland, to an outstanding student in vocational agriculture in Talbot County who will matriculate in the College of Agriculture. This grant is assigned by the Committee on Scholarships in accordance with the terms of the award. Application blanks for this grant may be procured at the office of the County Superintendent of Schools of Talbot County or by writing directly to the Chairman of the Committee on Scholarships.

**WASHINGTON STEWARDS' EDUCATIONAL SCHOLARSHIP FUND**—This fund provides grants to be awarded to a junior or senior who is preparing for a career as a food manager or dietitian. These grants are awarded by the Committee on Scholarships and Grants-in-Aid in cooperation with the Department of Foods and Nutrition of the College of Home Economics.

**WESTERN ELECTRIC SCHOLARSHIP**—This scholarship is awarded to a student in the College of Engineering. The amount of the scholarship covers cost of tuition, books and fees not to exceed \$800 nor to be less than \$400. The award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Engineering.

**WESTINGHOUSE AIR ARM DIVISION SCHOLARSHIP**—The Westinghouse Electric Corporation has established a scholarship to encourage outstanding students of engineering and the physical sciences. The scholarship is awarded to a sophomore student and is paid over a period of three years in six installments of \$250. Students in electrical or mechanical engineering, engineering physics or applied mathematics are eligible for the award. Selection of the recipient is based on achievement as reflected by scholastic standing and general college record. The award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Engineering.

**THE ARTHUR YOUNG AND CO. FOUNDATION, INC. SCHOLARSHIP**—The Arthur Young and Co. Foundation, Inc., makes available a scholarship of \$750 for an exceptional senior student concentrating in accounting who is registered in the College of Business and Public Administration. This award is made by the Committee on Scholarships and Grants-in-Aid in cooperation with the College of Business and Public Administration.

## STUDENT LOANS

**NDEA STUDENT LOANS**—The National Defense Education Act of 1958 provides funds for student loans. A student may borrow in one year a sum not exceeding \$1,000 and during his entire course of study may borrow a sum not exceeding \$5,000. The borrower must sign a note for the loan and agree to interest and repayment terms established by the University. Repayment of the loan begins one year after the borrower ceases to be a full time student and must be completed within ten years thereafter. No interest is charged on the loan until the beginning of the repayment schedule. Interest after that date is to be paid at the rate of 3 percent per annum.

The National Defense Education Act contains a provision which provides that up to fifty percent of a student loan plus interest may be cancelled in the event the borrower becomes a full time elementary or secondary school teacher. Such cancellation is to be at the rate of 10 percent a year to five years.

**CATHERINE MOORE BRINKLEY LOAN FUND**—Under the will of Catherine Moore Brinkley, a loan fund is available for worthy students who are natives and residents of Maryland.

COLLEGE  
of  
AGRICULTURE

Catalog Series 1960-1961



UNIVERSITY OF MARYLAND

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# BOARD OF REGENTS

## and

### MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK <i>Chairman</i> .....	1966
McCormick and Company, 414 Light Street, Baltimore 2	
EDWARD F. HOLTER <i>Vice-Chairman</i> .....	1968
The National Grange, 744 Jackson Place, N.W., Washington 6	
B. HERBERT BROWN <i>Secretary</i> .....	1960
The Baltimore Institute, 10 West Chase Street, Baltimore 1	
HARRIS NUTTLE <i>Treasurer</i> .....	1966
Denton	
LOUIS L. KAPLAN <i>Assistant Secretary</i> .....	1961
5800 Park Heights Avenue, Baltimore 15	
ENOS S. STOCKBRIDGE <i>Assistant Treasurer</i> .....	1960
10 Light Street, Baltimore 2	
THOMAS W. PANGBORN .....	1965
The Pangborn Corporation, Pangborn Blvd., Hagerstown	
THOMAS B. SYMONS .....	1963
Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	
C. EWING TUTTLE .....	1962
907 Latrobe Building, Charles and Read Streets, Baltimore 2	
WILLIAM C. WALSH .....	1968
Liberty Trust Building, Cumberland	
MRS. JOHN L. WHITEHURST .....	1967
4101 Greenway, Baltimore 18	

Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

# OFFICERS OF ADMINISTRATION

## *Principal Administrative Officers*

WILSON H. ELKINS, *President*

B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936;  
D. PHIL., 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBAKE, *Dean of the Faculty*

B.S., State Teachers College, California, Pa., 1934; M.A., Ohio State University, 1936;  
PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

## *Emeritus*

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

## *Administrative Officers of the Schools and Colleges*

MYRON S. AISENBERG, *Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

## CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

### GENERAL COMMITTEE ON EDUCATIONAL POLICY

Dr. Ronald Bamford (Graduate School), *Chairman*

### COMMITTEE ON ADMISSIONS

Dr. Russell G. Brown (Agriculture), *Chairman*

### COMMITTEE ON INSTRUCTIONAL PROCEDURES

Dr. Ronald Bamford (Graduate School), *Chairman*

### COMMITTEE ON SCHEDULING AND REGISTRATION

Dr. Robert Rappleye (Agriculture), *Chairman*

### COMMITTEE ON PROGRAMS, CURRICULA AND COURSES

Dr. Irvin C. Haut (Graduate School), *Chairman*

### COMMITTEE ON SCHOLARSHIPS AND GRANTS-IN-AID

Dr. Paul Nystrom (Agriculture), *Chairman*

### COMMITTEE ON FACULTY RESEARCH

Dr. Edward J. Herbst (Medicine), *Chairman*

### COMMITTEE ON PUBLIC FUNCTIONS AND COMMENCEMENTS

Mr. B. James Borreson (Executive Dean for Student Life), *Chairman*

### COMMITTEE ON LIBRARIES

Dr. Charles Murphy (Arts and Sciences), *Chairman*

### COMMITTEE ON UNIVERSITY PUBLICATIONS

Dr. Charles A. Taff (Business and Public Administration), *Chairman*

### COMMITTEE ON STUDENT LIFE AND ACTIVITIES

Dr. L. Morris McClure (Education), *Chairman*

### COMMITTEE ON STUDENT PUBLICATIONS AND COMMUNICATIONS

Dr. Franklin Cooley (Arts and Sciences), *Chairman*

### COMMITTEE ON STUDENT DISCIPLINE

Dr. Allan J. Fisher (Business and Public Administration), *Chairman*

### COMMITTEE ON RELIGIOUS LIFE

Professor Louis E. Otts (Engineering), *Chairman*

### COMMITTEE ON STUDENT HEALTH AND WELFARE

Dr. Marvin H. Eyler (Physical Education), *Chairman*

### COMMITTEE ON STUDENT EMPLOYMENT AND SELF-HELP

Dr. Warren R. Johnson (Physical Education), *Chairman*

### COMMITTEE ON INTERCOLLEGIATE COMPETITION

Dr. Clyne S. Shaffner (Agriculture), *Chairman*

### COMMITTEE ON PROFESSIONAL ETHICS, ACADEMIC FREEDOM AND TENURE

Dr. Peter Lejins (Arts and Sciences), *Chairman*

### COMMITTEE ON APPOINTMENTS, PROMOTIONS AND SALARIES

Dr. William E. Bickley (Agriculture), *Chairman*

### COMMITTEE ON FACULTY LIFE AND WELFARE

Dr. Guy B. Hathorn (Business and Public Administration), *Chairman*

### COMMITTEE ON MEMBERSHIP AND REPRESENTATION

Dr. Joseph C. Biddix (Dentistry), *Chairman*

## THE COLLEGE

THE COLLEGE OF AGRICULTURE OFFERS AN EDUCATIONAL PROGRAM DESIGNED to prepare students for careers in agricultural sciences, agricultural technology and agricultural business. Students receive a basic fundamental and cultural education, correlated with technical agricultural courses and related sciences.

### HISTORY

The College of Agriculture is the oldest division of the University of Maryland at College Park. The institution was chartered in 1856 under the name of the Maryland Agricultural College. For three years the College was under private management. When Congress passed the Land Grant Act in 1862, the General Assembly of Maryland accepted it for the state and named the Maryland Agricultural College as the beneficiary. When the institution was merged in 1920 with the University of Maryland in Baltimore, the College of Agriculture took its place as one of the major divisions of this larger, more comprehensive organization.

In addition to teaching, the College of Agriculture includes the Agricultural Experiment Station and the Extension Service. They were established as the result of acts passed by Congress in 1887 and 1914 respectively. A more complete description of these two services appears later in this bulletin.

### General Information

Graduates of the College of Agriculture are trained for employment in scientific areas related to agriculture, in agricultural business and industry or with a local, state or federal agency. Curricula in the College of Agriculture provide for broad training in cultural and scientific courses as well as in courses related to various areas of agricultural specialization. Programs are offered for: (1) those planning to pursue the agricultural sciences and who plan to do graduate study; (2) those planning to pursue the business activities in agricultural and related industries, and (3) those planning to pursue the technology of animal and plant production, the engineering, chemistry, and food processing of agricultural products as well as teaching and extension in agriculture.

Many professors also conduct research studies in their respective fields. Through these studies the frontiers of knowledge are constantly being extended. These new findings are incorporated in courses thereby making the instruction in agriculture dynamic.

The close relationship of extension specialists, county agents, and home demonstration agents with farmers and farm families enables workers in the College to evaluate the farm situation. New farm problems are brought to the attention of the research worker and new developments are presented to farmers and their families.

The coordination of teaching, research and extension provides for the effective training of students in the College of Agriculture for a career in

## *General Information*

agriculture. Many professors also contribute to the research and extension programs concerned with agriculture and food production, the development of new varieties and processing procedures, as well as adjustments in agricultural production and marketing.

Trained workers in the College of Agriculture, through regulatory and service activities, are constantly working with actual problems associated with the improvement and maintenance of standards for farm products. Regulatory and control work extends over a wide range of activities and is concerned with reducing losses due to insect pests and diseases; preventing and controlling serious outbreaks of diseases and pests of animals and plants; analyzing fertilizer, feed and lime for guaranteed quality; and analyzing and testing germination quality of seeds to insure better seeds for farm planting. Marketing services include federal-state inspection, fresh egg law, dairy inspection, seed inspection, weight and measures and market news service.

### SPECIAL ADVANTAGES

The University of Maryland is within a few miles of the Agricultural Research Center of the United States Department of Agriculture. This is the largest best manned, and best equipped agriculture research agency in the world. Also, the University of Maryland, is within a few miles of the Washington, D. C., offices of the Department of Agriculture and other government departments, including the Library of Congress. Students can easily visit these agencies and become acquainted with their work and the men who conduct this work. Such contacts have proved valuable to many University of Maryland graduates.

Also, it is not uncommon for men from these agencies to speak before classes at the University and to be guest speakers at student club meetings and otherwise take part in student activities. No other college of agriculture in the United States is physically located to offer like opportunities to its students.

### COORDINATION OF AGRICULTURAL WORK

The strength of the College of Agriculture of the University of Maryland lies in the close coordination of the instructional, research, extension, and regulatory functions within the individual departments, between the several departments, and in the institution as a whole. Instructors in the several departments are closely associated with the research, extension and regulatory work being carried on in their respective fields, and in many cases, devote a portion of their time to one or more of these types of activities. Close coordination of these four types of work enables the University to provide a stronger faculty in the College of Agriculture, and affords a higher degree of specialization than would otherwise be possible. It insures instructors an opportunity to keep informed on the latest results of research, and to be constantly in touch with current trends and problems which are revealed in extension and regulatory activities. Heads of departments hold staff conferences to this end.



so that the student at all times is as close to the developments in the frontiers of the several fields of knowledge as it is possible for an organization to put him.

In order that the work of the College shall be responsible to agricultural interests and shall adequately meet the needs of the several agricultural industries in the state, and that the course of instruction shall at all times be made most helpful for students who pursue them, advisory councils have been constituted in the major industries of agriculture. The councils are composed of leaders in the respective lines of agriculture in Maryland, and the instructional staff of the College of Agriculture has the benefit of their council and advice. By this means the College, the industries, and the students are kept abreast of developments.

#### FACILITIES AND EQUIPMENT

In addition to buildings, laboratories, libraries, and equipment for effective instruction in the related basic sciences and in the cultural subjects, the University of Maryland is provided with excellent facilities for research and instruction in agriculture. University farms, totaling more than 2,000 acres, are operated for instructional and investigational purposes. One of the most complete and modern plants for dairy and animal husbandry work in the country, together with herds of the principal breeds of dairy and beef cattle, and other livestock, provides facilities and materials for instruction and research in these industries. Excellent laboratory and field facilities are available in the Agronomy Department for breeding and selection in farm crops, and for soils research. The Poultry Department has a building for laboratories and classrooms, a plant comprising twenty acres, and flocks of the important breeds of poultry. A research farm is available for experimental testing under field conditions. The Horticulture Department is housed in a separate building, and has ample orchards, gardens and greenhouses for its various lines of work. A research farm is located near Salisbury where experimental work is carried on in the area of intense production.

#### COSTS

Actual annual costs of attending the University include: \$185.00 fixed charges; \$101.00 special fees; \$400.00 board; \$170.00 to \$200.00 lodging for Maryland residents, or \$220.00 to \$250.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new students. A charge of \$300.00 is assessed to all students who are non-residents of the State of Maryland. is assessed to all students who are non-residents of the State of Maryland.

A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee.

Complete information regarding costs is available in the publication *An Adventure in Learning*.

## General Information

### AIR SCIENCE

All male students unless specifically exempted under University rules are required to take Basic Air Science training for a period of two years. The successful completion of this course is a prerequisite for graduation, but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of R.O.T.C. training will be required to complete the course or take it until graduation, whichever occurs first.

Selected students who wish to do so may carry Advanced Air Science courses during their junior and senior years which lead to a regular or reserve commission in the United States Air Force.

### SCHOLARSHIPS AND GRANTS-IN-AID FOR AGRICULTURAL STUDENTS

A limited number of scholarships are available for agricultural students. These include awards granted by the Sears Roebuck Foundation, the Borden Company, Dr. Ernest N. Cory Trust Fund, the Danforth Foundation, the Ralston Purina Company, Southern States Cooperative, Inc., J. McKenny Willis and Sons, Dairy Technology Society of Maryland and District of Columbia, Miller Chemical and Fertilizer Corporation, and Peninsula Horticultural Society.

These scholarships and grants-in-aid are awarded by the Faculty Committee in accordance with the terms of the respective grants. More detailed information about these awards is contained in the publication *An Adventure in Learning*.

### STUDENT ORGANIZATIONS

Students find opportunity for varied expression and growth in the several voluntary organizations sponsored by the College of Agriculture. These organizations are: Agricultural Economics Club, Block and Bridle Club, Collegiate 4-H Club, Dairy Science Club, Student Institute of Food Technology, Future Farmers of America, Agronomy Club, Riding Club, Poultry Science Club, and the Veterinary Science Club.

Alpha Zeta is a national agricultural honor fraternity. Members are chosen from students in the College of Agriculture who have met certain scholastic requirements and displayed leadership in agriculture.

The Agricultural Student Council is made up of representatives from the various student organizations in the College of Agriculture. Its purpose is to coordinate activities of these organizations and to promote work which is beneficial to the College.

### STUDENT JUDGING TEAMS

The College of Agriculture sponsors judging teams for dairy cattle, dairy products, horticultural products, livestock, meats and poultry. Team members

are selected from students taking courses designed especially to train them for this purpose. Teams are entered in major contests where the students compete with teams from other state universities or agricultural colleges.

#### FOR ADDITIONAL INFORMATION

Detailed information concerning fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September of each year to all undergraduate students, and again in February to all new undergraduate students not previously enrolled in the preceding fall semester.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

#### COLLEGES LOCATED AT COLLEGE PARK:

Dean  
(College in which you are interested)  
The University of Maryland  
College Park, Maryland

#### PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean  
(School in which you are interested)  
The University of Maryland  
Lombard and Greene Streets  
Baltimore 1, Maryland

## Awards

#### ALPHA ZETA MEDAL

The honorary agricultural fraternity of Alpha Zeta awards annually a medal to the agricultural student in the freshman class who attains the highest average record in academic work. The presentation of the medal does not elect the student to the fraternity, but simply indicates recognition of high scholarship.

#### APPLEMAN-NORTON AWARD

This award is made annually to a senior for excellence in botany.

#### GRANGE AWARD

The Maryland State Grange makes an annual award to the senior who has

## *Awards, Academic Information*

excelled in leadership and scholastic attainment and has contributed meritorious service to the College of Agriculture.

### NATIONAL BLOCK AND BRIDLE AWARD

The National Block and Bridle awards annually a plaque to the member of the Block and Bridle Club who has done the most for the local club during the year.

### NATIONAL PLANT FOOD INSTITUTE AWARD

National Plant Food Institute awards annually the Agronomy Achievement Award to the outstanding junior or senior student in Agronomy. The amount of award is \$200.

### VIRGINIA DARE AWARD

The Virginia Dare Extract Company awards annually a plaque and \$25.00 to the outstanding student in ice cream manufacturing with an over-all good standing in dairy.

### EDGAR P. WALLS AWARD

Dr. Edgar P. Walls awards annually a gold watch to the senior doing outstanding work in horticultural processing.

## Academic Information

### DEPARTMENTS AND CURRICULA

Departments in the College of Agriculture and their curricula are as follows: Agricultural Economics (including agricultural business); Agricultural Education and Rural Life; Agriculture-Engineering; Agronomy (including crops and soils); Animal Husbandry; Botany (plant morphology and taxonomy, plant pathology, and plant physiology and ecology); Dairy (dairy husbandry and dairy technology); Entomology (including bee culture); Horticulture (pomology, olericulture, floriculture, ornamental horticulture and commercial processing); Poultry Husbandry; Veterinary Science. In addition, there are curricula in Agricultural Chemistry and General Agriculture. Courses of study may also be arranged for any who desire to return to the farm after one or more years of training in practical agricultural subjects.

### ADMISSION

All students desiring to enroll in the College of Agriculture must apply to the Director of Admissions of the University of Maryland at College Park.

The high school or preparatory school student who intends to apply for admission to the University should plan his secondary school program carefully. He should select a program that will prepare him adequately to begin college work at the college level. He should allow for the fact that his interests may change by selecting a secondary school program that will en



able him, when he enters the University, to have a maximum freedom of choice among the various curricula offered at the University.

Every candidate for admission to the University must normally present sixteen units of high school subjects. It is required that seven of the minimum sixteen units be in college preparatory subjects as follows:

English .....	4 units
Mathematics (preferably algebra) .....	1 unit
History or Social Sciences .....	1 unit
Biological or Physical Sciences .....	1 unit

The other units should be chosen to give the student as strong a preparation as possible for his work at the University. At least twelve of the units presented should be in college preparatory courses in academic subjects. Although there is no entrance requirement in foreign languages, two or more units are highly desirable for many programs and are suitable for all programs. Likewise it is desirable that each student offer two units in history or social sciences, and two units in the biological and physical sciences. It is strongly recommended that all students present a unit of plane geometry in addition to the one or two units of algebra.

The following preparatory program has been designed to give the prospective applicant great freedom of choice among the many curricula at the University. The student who successfully completes this program will be able to enter any curriculum at the University and to proceed without loss of time.

English .....	4 units
Mathematics .....	3½ units
(algebra, 2 units; plane geometry, 1 unit; trigonometry, ½ unit. Prospective engineering students should include solid geometry, ½ unit)	
History or social sciences.....	2 units
Biological and physical sciences.....	2 units
Foreign language .....	2 units
Unspecified .....	2½ units

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16 units

Deviation from these recommendations is permitted, but should be undertaken only upon competent advice. An unwise selection of preparatory courses can effectively prevent the student from pursuing certain curricula at the University or materially increase the time necessary to complete a particular curriculum. Every prospective applicant should be certain that his preparation in mathematics is adequate for any program he might conceivably wish to enter. A special fee will be charged for all remedial work in mathematics with the exception of the course in solid geometry.

A well-planned program of college preparatory work contributes much to the success of a student in his college work. This fact has an important bearing in estimating whether a candidate for admission is likely to be suc-

# REQUIRED AND RECOMMENDED SUBJECTS FOR ADMISSION TO THE VARIOUS UNDERGRADUATE PROGRAMS IN THE COLLEGE OF AGRICULTURE

Note: The student should follow the recommendations given below and should fill out the rest of his high school program with suitable electives. At least twelve (12) of the units offered should be in academic subjects.

	English	Mathematics	Biological and Physical Sciences	Foreign Languages	History and Social Sciences
<b>COLLEGE OF AGRICULTURE</b> Majors in Agricultural Engineering, Agricultural Chemistry	4 units required	Required: College Preparatory Mathematics*— 3½ units Strongly recommended: A total of 4 units in College Preparatory Mathematics*	1 unit required 2 or 3 units recommended, including Chemistry—1 unit Physics—1 unit	2 or more units recommended French, Latin, or German	1 unit required 2 or more units recommended
<b>COLLEGE OF AGRICULTURE</b> Majors in Botany, Entomology	4 units required	Essential: Algebra—1 unit Plane Geometry— 1 unit Strongly recommended: An additional unit of Algebra and ½ unit of Trigonometry	1 unit required 2 or 3 units recommended, including Chemistry—1 unit Physics—1 unit	2 or more units recommended French, Latin, or German	1 unit required 2 or more units recommended
<b>COLLEGE OF AGRICULTURE</b> Majors in General Agriculture, Agricultural Economics and Marketing, Agricultural Education, Agronomy, Animal Husbandry, Dairy, Horticulture, Poultry Husbandry; Pre-veterinary program	4 units required	1 unit required Strongly recommended: Algebra—1 or 2 units Plane Geometry— 1 unit	1 unit required At least 2 units highly desirable: Biology, Chemistry, Physics.	No requirement	1 unit required

\*College Preparatory Mathematics means work from the following areas: algebra, geometry (plane and solid), trigonometry and (if available) analytic geometry and mathematical analysis (calculus).

cessful in his work at the University.

The accompanying chart summarizes the specific requirements of the various curricula offered in the College of Agriculture.

### JUNIOR STANDING

To earn junior standing a student must complete fifty-six (56) semester hours of academic credit with an average grade of "C" (2.0) or better. In computing this average, the following provisions apply: all academic courses carrying one or more credits which have been taken up to the time of computation shall be included; courses carrying "O" credit shall not be included; in every course only the most recent grade shall be counted; courses in the basic R.O.T.C., the physical education required of all University students, and the health courses required of all women students (i.e., the courses numbered A. S. 1, 2, 3, 4; P. E. 1, 2, 3, 4, 5, 6, 7, 8; Hea. 2, 4) shall *not* be included, but courses in the advanced R.O.T.C. and courses in health or physical education which are taken as electives shall be included.

Detailed regulations pertaining to junior standing are presented in full in the publication, *University General and Academic Regulations*.

### REQUIREMENTS FOR GRADUATION

Each student must acquire a minimum of 120 semester hour credits in academic subjects other than basic air science and physical activities. Men must acquire in addition 8 hours in Basic Air Science and 4 hours in physical activities. Women must acquire in addition 4 hours in hygiene, and 4 hours in physical activities.

### STUDENT ADVISERS

Each student in the College of Agriculture is assigned to a faculty adviser, either departmental or general. Departmental advisers consist of heads of departments or persons selected by them to advise students with curricula in their respective departments. General advisers are selected for students who have no definite choice of curriculum in mind, or who wish to pursue the general curriculum in agriculture.

### ELECTIVES

The electives in the suggested curricula which follow affords opportunity for those who so desire to supplement major and minor fields of study or to add to their general training.

With the advice and consent of those in charge of his registration, a student may make such modifications in his curriculum as are deemed advisable to meet the requirements of his particular need.

### FIELD AND LABORATORY PRACTICE

The head of each department will help to make available opportunities for practical or technical experience along his major line of study for each student whose major is in that department and who is in need of such experience. For inexperienced students in many departments this need may be met by one or more summers spent on a farm.

### FRESHMAN YEAR

The program of the freshman year in the College of Agriculture is the same for all curricula of the College. Its purpose is to afford the student an opportunity to lay a broad foundation in subjects basic to agriculture and the related sciences, to articulate beginning work in college with that pursued in high or preparatory schools, to provide opportunity for wise choice of programs in succeeding years, and to make it possible for a student before the end of the year to change from one curriculum to another, or from the College of Agriculture to a curriculum in some other college of the University with little or no loss of credit.

Students entering the freshman year with a definite choice of curriculum in mind are sent to departmental advisers for counsel as to the wisest selection of freshman electives from the standpoint of their special interests and their probable future programs. Students entering the freshman year with no definite curriculum in mind, are assigned to a general adviser, who assists with the choice of freshman electives and during the course of the year acquaints the students with opportunities in the upper curricula in the College of Agriculture and in the other divisions of the University. If by the close of the freshman year a student makes no definite choice of a specialized curriculum, he continues under the guidance of his general adviser in the General Agriculture curriculum.



# CURRICULA

## AGRICULTURE CURRICULUM

All students in the College of Agriculture are required to complete a series of courses to satisfy University requirements, College requirements and departmental requirements. The remaining courses needed to complete a program of study are elected by the student with the approval of his adviser.

	Semester Credit Hours
<i>University Requirements:</i>	
Eng. 1, 2—Composition and American Literature <sup>1</sup> .....	6
G. & P. 1—American Government <sup>1</sup> .....	3
Soc. 1—Sociology of American Life or alternate <sup>1</sup> .....	3
Eng. 3, 4—Composition and World Literature or	
Eng. 5, 6—Composition and English Literature .....	6
H. 5, 6—History of American Civilization <sup>1</sup> .....	6
FOR MEN:	
Basic Air Science .....	8
Physical Activities .....	4
FOR WOMEN:	
Hea. 2—Personal Health .....	2
Hea. 5—Community Health .....	2
Physical Activities .....	4

### *College of Agriculture Requirements:*

Chem. 1, 3—General Chemistry.....	8
Sp. 7—Public Speaking .....	2
Agr. 1—Introduction to Agriculture.....	1

### ELECT TWO OF THE FOLLOWING:

- Bot. 1—General Botany (4)
- Zool. 1—General Zoology (4)
- Microb. 1—General Microbiology (4)

Students failing to pass the pre-registration test in mathematics will be required to take Math. 0.

Students expecting to pursue the curriculum in either Agricultural Chemistry or Agriculture-Engineering should, if qualified, take Math. 18 or 19. If not qualified they should take Math. 1.

### *Departmental Requirements:* ..... 77

Required courses are determined by the department for each specific curriculum and elective courses are approved by the adviser of the student's program.

A program of courses for the freshman year is essentially the same for all students. However, there are some variations in several curricula.

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<sup>1</sup>For classification tests and alternate courses, see Program in American Civilization section published in *University General and Academic Regulations*.

# General Agriculture Curriculum

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature .....	3	3
G. & P. 1—American Government .....	3	..
Soc. 1—Sociology of American Life or alternate .....	..	3
Agr. 1—Introduction to Agriculture .....	1	..
Bot. 1—General Botany .....	4	..
Zool. 1—General Zoology .....	..	4
A. H. 1—Fundamentals of Animal Husbandry .....	3	..
Agron. 1—Crop Production .....	..	3
A. S. 1, 2—Basic Air Science (men).....	2	2
Physical Activities (men and women).....	1	1
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women).....	..	2

## AGRICULTURE—GENERAL

This curriculum is designed for persons wishing to return to the farm, enter work allied to farming, for those seeking a general rather than a specialized knowledge of the field of agriculture and for those preparing to work in any general field in agriculture or agri-business.

By proper use of the electives allowed in this curriculum, a student may choose a field of concentration in agriculture and at the same time elect courses that contribute to a liberal education.

University Requirements (see page 11)  
 College of Agriculture Requirements (see page 11)

<i>General Agricultural Requirements:</i>	Semester	
	Credit Hours	
A. E. 107—Analysis of the Farm Business .....	3	
A. E. 108—Farm Management .....	3	
R. Ed. 114—Rural Life and Education.....	3	
Agr. Engr. 101—Farm Machinery .....	3	
Agr. Engr. 106—Farm Mechanics .....	2	
Agron. 10—General Soils .....	4	
Agron. 107—Cereal Crop Production .....	3	
Agron. 108—Forage Crop Production .....	3	
Agron. 151—Cropping Systems .....	2	
A. H. 1—Fundamentals of Animal Husbandry.....	3	
A. H. 110—Feeds and Feeding .....	3	
Bot. 20—Diseases of Plants.....	3	
Dairy 1—Fundamentals of Dairying.....	3	
Ent. 20—Insect Pests of Agricultural Crops.....	4	
Hort. 5 or 58—General Horticulture.....	3	
P. H. 1—Poultry Production.....	3	
Elect either of the following pairs of courses:		
Science Sequence .....	8	
B. A. 20, 21—Principles of Accounting.....	8	
Electives <sup>1</sup> .....	21	

<sup>1</sup> Three-fourths of the electives must be 100 level courses.

## AGRICULTURAL CHEMISTRY

This curriculum insures adequate instruction in the fundamentals of both the physical and biological sciences. It may be adjusted through the selection of electives to fit the student for work in agricultural experiment stations, soil bureaus, geological surveys, food laboratories, fertilizer industries and those handling food products.

*University Requirements (see page 11)*

*College of Agriculture Requirements (see page 11)*

<i>Agricultural Chemistry Requirements:</i>	<i>Semester Credit Hours</i>
Chem. 15—Qualitative Analysis .....	4
Chem. 21—Quantitative Analysis .....	4
Chem. 35—Elementary Organic Lecture .....	2
Chem. 36—Elementary Organic Laboratory .....	2
Chem. 37—Elementary Organic Lecture .....	2
Chem. 38—Elementary Organic Laboratory .....	2
Chem. 123—Quantitative Analysis .....	4
Agron. 10—General Soils .....	4
Bot. 1—General Botany .....	4
Geol. 1—Geology .....	2
Math. 20—Calculus .....	4
Math. 21—Calculus .....	4
Modern Languages .....	12
Phys. 20—General Physics .....	5
Phys. 21—General Physics .....	5
Sp. 7—Public Speaking .....	2
Zool. 1—General Zoology .....	4
Electives in Biology.....	6
Electives in Agricultural Chemistry.....	14

## AGRICULTURAL ECONOMICS

This Department combines training in the business and economic aspects of agricultural production and marketing as well as the biological and physical sciences basic to agriculture. Programs are available for students in agricultural economics and in agricultural business. Students desiring to enter agricultural marketing, foreign service, or businesses affiliated with agriculture may elect the agricultural business option. Students interested primarily in the broad aspects of production and management as it relates to the operation of a farm business may elect the agricultural economics option. These programs train students for employment in agricultural business and industry, in positions of sales or management, with local, state or federal agencies, extension workers, college teachers, researchers, farm operators or farm managers.

Courses for the freshman and sophomore years are essentially the same for all students. In the junior year the student elects the agricultural economics or agricultural business option according to his particular interest. Courses in this

## *Agricultural Economics Curriculum*

Department are designed to provide training in the application of economic principles to the production, processing, distribution and merchandising of agricultural products as well as the inter-relationship of business and industry associated with agriculture in a dynamic economy. The curriculum includes courses in general agricultural economics, marketing, farm management, finance, prices, taxation, land economics, agricultural policy, and foreign agricultural trade.

*University Requirements (see page 11)*

*College of Agriculture Requirements (see page 11)*

	Semester Credit Hours
<i>Required of both options:</i>	
Econ. 31, 32—Principles of Economics.....	6
Math. 5—General Mathematics .....	3
A. E. 50—Farm Economics .....	3
A. E. 101—Marketing of Farm Products .....	3
A. E. 106—Prices of Farm Products .....	3
A. E. 108—Farm Management .....	3
A. E. 110—Seminar .....	2
Agron. 10—General Soils .....	4
B. A. 130—Elements of Business Statistics.....	3
A. H. 110—Feeds and Feeding.....	3

### *Agricultural Economics Option:*

A. E. 104—Farm Finance .....	3
A. E. 107—Analysis of the Farm Business .....	3
A. E. 111—Land Economics .....	3
A. E. 101—Farm Machinery .....	3
Agron. 151—Cropping Systems .....	2
Dairy 1—Dairy Production or P. H. 1—Poultry Production.....	3

Select three of the following courses:

A. E. 114—Foreign Trade in Farm Products.....	3
Geog. 10—General Geography .....	3
Agr. Engr.—Gas Engines and Tractors.....	3
A. H. 150—Livestock Markets and Marketing.....	3
Soc. 113—The Rural Community .....	3
Electives .....	18

### *Agricultural Business Option:*

A. E. 103—Cooperation in Agriculture .....	3
A. E. 112—Economic Development of American Agriculture.....	3
A. E. 114—Foreign Trade in Farm Products .....	3
Geog. 10—General Geography .....	3
B. A. 20—Principles of Accounting.....	4
B. A. 150—Marketing Management .....	3



Select three of the following courses:

A. E. 119—Foreign Agricultural Economics .....	3
Econ. 132—Advanced Economic Principles .....	3
Econ. 140—Money and Banking .....	3
B. A. 151—Advertising .....	3
B. A. 180—Business Law .....	4
Electives .....	16

## AGRICULTURAL EDUCATION AND RURAL LIFE

The primary objective of this curriculum is to prepare students for teaching vocational agriculture. It also prepares them for work as county agents and allied lines of the rural educational services. Graduates are in demand in rural businesses, particularly of the cooperative type; a number have entered the federal service; others are engaged in teaching and research in agricultural colleges; quite a few have returned to the farm as owner-managers.

Courses in extension methods are included in agricultural education. They are especially designed for students who wish to train for extension work, as well as others who wish to learn more about how the extension service operates. Agricultural education majors, as well as others, are urged to take these courses.

In addition to the regular entrance requirements of the University, involving graduation from a standard four-year high school, students electing the agricultural education curriculum must present evidence of having acquired adequate farm experience after reaching the age of fourteen years.

All students following this curriculum are required to attend meetings of the Collegiate Chapter of the Future Farmers of America during their junior and senior years in order to gain needed training to serve as advisers of high school chapters of FFA upon graduation. Freshman and sophomore agricultural education majors are also urged to become members of the FFA and to participate in the activities of the organization.

## Agricultural Education, Agriculture-Engineering Curriculum

University Requirements (see page 11)

College of Agriculture Requirements (see page 11)

	Semester Credit Hours
<b>Departmental Requirements:</b>	
A. H. 1—Fundamentals of Animal Husbandry.....	3
Agron. 1—Crop Production .....	3
Dairy 1—Fundamentals of Dairying .....	3
P. H. 1—Poultry Production .....	3
Hort. 58—Vegetable Production .....	3
Bot. 20—Diseases of Plants .....	3
Ent. 20—Insect Pests of Agricultural Crops.....	4
Agron. 10—General Soils .....	4
A. H. 110—Feeds and Feeding.....	3
Agr. Engr. 56—Introduction to Farm Mechanics.....	2
Agr. Engr. 101—Farm Machinery .....	3
Agr. Engr. 102—Gas Engines Tractors and Autos.....	3
Agr. Engr. 104—Farm Mechanics .....	2
A. E. 108—Farm Management .....	3
H. D. Ed. 100, 101—Principles of Human Development I and II....	6
R. Ed. 101—Teaching Farm Practices and Demonstrations.....	3
R. Ed. 103—Practice Teaching <sup>1</sup> .....	5
R. Ed. 107—Observation and Analysis of Teaching Agriculture.....	3
R. Ed. 109—Teaching Secondary Vocational Agriculture.....	3
R. Ed. 111—Teaching Young and Adult Farmer Groups.....	1
R. Ed. 112—Departmental Management .....	1
R. Ed. 114—Rural Life and Education.....	3
Science electives .....	6
Agriculture electives .....	4

## AGRICULTURE-ENGINEERING

For students of agriculture, the Department offers training in those agricultural subjects which are based upon engineering principles. These subjects may be grouped under five heads: farm power and farm machinery, farm structures, soil and water practices, such as drainage, erosion control and irrigation, as related to engineering, farm electrification, and mechanics and equipment for agricultural processing.

### FIVE-YEAR PROGRAM IN AGRICULTURE—ENGINEERING

For those students who wish to specialize in the application of engineering principles to the physical and biological problems of agriculture there is offered a combined program, extending over a five-year period, arranged jointly by the College of Agriculture and the College of Engineering, and leading to a degree from each of these colleges.

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<sup>1</sup> Majors in agricultural education are also required to take R. Ed. 104, Practice Teaching, four credits (or its equivalent), to be arranged in a four-week period prior to the opening of the University of Maryland in the fall of their senior year.

This program prepares graduates to enter such diversified fields of employment as soil and water conservation, management of water resources, and design of farm structures; the design and supervision of rural electrification distribution systems and applications of electrical equipment; the design, application, and distribution of farm machinery; or the development of new uses for farm products and the profitable utilization of farm wastes and by-products.

To be properly trained in these fields a student needs a broader knowledge of basic and applied engineering principles than could be provided in a four-year course in agriculture. He also needs a broader training in the fundamentals of agriculture than a standard four-year course in engineering could furnish.

Upon completion of the normal four-year course of study the degree of Bachelor of Science in Agriculture is granted. For the fifth year the student registers in the College of Engineering, and at the end of that year, upon satisfactory completion of the required course of study, receives a degree in civil, electrical, mechanical or chemical engineering.

#### CURRICULUM IN AGRICULTURE—ENGINEERING

<i>Freshman Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
Eng. 1, 2—Composition and American Literature.....	3	3
Sp. 7—Public Speaking .....	..	2
Math. 18, 19—Elementary Mathematical Analysis <sup>1</sup> .....	5	5
Chem. 1, 3—General Chemistry.....	4	4
Dr. 1, 2—Engineering Drawing .....	2	2
Agr. 1—Introduction to Agriculture.....	1	..
A. S. 1, 2—Basic Air Science (men).....	2	2
Physical Activities .....	1	1
Total .....	18	19

<i>Agriculture-Engineering Requirements:</i>	<i>Semester</i>	
	<i>Credit Hours</i>	
Civil Engineering Option, 4 years.....	98	
A. E. 108—Farm Management.....	3	
Agr. Engr. 101—Agricultural Machinery .....	2	
Agr. Engr. 102—Agricultural Tractors and Power Units.....	2	
Agr. Engr. 105—Farm Structures .....	2	
Agr. Engr. 107—Soil and Water Conservation Engineering.....	1	
Agr. Engr. 56—Introduction to Farm Mechanics; or.....	2	
Agr. Engr. 109—Farm Applications of Electricity.....	1	
Agr. Engr. 131—Agricultural Machinery Design Laboratory.....	1	
Agr. Engr. 132—Farm Power Analysis Laboratory.....	1	
Agr. Engr. 135—Farm Structures Design Laboratory.....	1	
Agr. Engr. 137—Soil and Water Conservation Engineering Laboratory	1	
Agr. Engr. 139—Farm Electrification Engineering Laboratory.....	1	
Agron. 10—General Soils.....	4	
C. E. 21—Statics .....	3	
C. E. 23—Strength of Materials.....	3	

<sup>1</sup>A qualifying test is given during registration to determine whether the student is adequately prepared for Math. 18. A student failing this test is required to take Math. 1, Introductory Algebra, without credit.

## Agriculture-Engineering Curriculum

	Semester Credit Hours
<i>Agricultural Engineering Requirements: (continued)</i>	
C. E. 24—Dynamics .....	3
C. E. 30—Materials of Engineering.....	2
C. E. 100—Seminar .....	2
C. E. 110, 111—Surveying I, II.....	6
C. E. 140—Fluid Mechanics .....	3
C. E. 160—Structural Analysis I.....	3
C. E. 180—Transportation .....	3
Dr. 1, 2—Engineering Drawing .....	4
E. E. 50—Fundamentals of Electrical Engineering.....	3
Math. 18, 19—Elementary Mathematical Analysis <sup>1</sup> .....	10
Math. 20, 21—Calculus .....	8
Math. 64—Differential Equations for Engineers .....	3
Phys. 20, 21—General Physics.....	10

Elect one of the following:

- A. H. 1—Fundamentals of Animal Husbandry (3)
- Dairy 1— Fundamentals of Dairying (3)
- P. H. 1—Poultry Production (3)

Elect one of the following:

- Agron. 1—Crop Production (3)
- Hort. 5—Tree Fruit Production (3)
- Hort. 58—Vegetable Production (3)
- Hort. 59—Berry Production (3)

Electives ..... 6

*Civil Engineering Option, 5th year..... 36*

C. E. 101—Construction Planning .....	3
C. E. 150—Soil Mechanics .....	3
C. E. 161—Structural Analysis II .....	3
C. E. 162—Structural Design (Steel) .....	3
C. E. 163—Structural Design (Concrete) .....	3
C. E. 170—Water Supply .....	3
C. E. 171—Sewerage .....	3
H. 5, 6—History of American Civilization.....	6
M. E. 105—Principles of Mechanical Engineering.....	3
Technical Electives .....	6

In order to provide depth in selected fields, students shall elect, with the advice and approval of the Department of Civil Engineering, from such groups of technical courses as will be offered in the fields of highway engineering, hydraulic engineering and hydrology, sanitary engineering, soils and foundations and structural engineering with a senior project in the field selected.

<sup>1</sup> A qualifying test is given during registration to determine whether the student is adequately prepared for Math. 18. A student failing this test is required to take Math. 1, Introductory Algebra, without credit.



<i>Mechanical Engineering Option, 4 years</i>	100
A. E. 108—Farm Management.....	3
Agr. Engr. 101—Agricultural Machinery .....	2
Agr. Engr. 102—Agricultural Tractors and Power Units.....	2
Agr. Engr. 105—Farm Structures .....	2
Agr. Engr. 107—Soil and Water Conservation Engineering.....	1
Agr. Engr. 56—Introduction to Farm Mechanics, or.....	2
Agr. Engr. 109—Farm Applications of Electricity.....	1
Agr. Engr. 131—Agricultural Machinery Design Laboratory.....	1
Agr. Engr. 132—Farm Power Analysis Laboratory.....	1
Agr. Engr. 135—Farm Structures Design Laboratory.....	1
Agr. Engr. 137—Soil and Water Conservation Engineering Laboratory	1
Agr. Engr. 139—Farm Electrification Engineering Laboratory.....	1
Agron. 10—General Soils .....	4
Ch. E. 140—Introduction to Nuclear Technology.....	2
Dr. 1, 2—Engineering Drawing .....	4
E. E. 51, 52—Principles of Electrical Engineering.....	8
Math. 18, 19—Elementary Mathematical Analysis <sup>1</sup> .....	10
Math. 20, 21—Calculus.....	8
Math. 64—Differential Equations for Engineers.....	3
M. E. 20, 21—Manufacturing Tools and Processes.....	2
M. E. 22, 23—Statics and Mechanics of Materials.....	6
M. E. 24—Dynamics .....	3
M. E. 100—Thermodynamics .....	3
M. E. 101—Heat Transfer .....	3
M. E. 102—Fluid Mechanics .....	3
M. E. 103—Metallography .....	3
M. E. 104—Kinematics .....	2
Phys. 20, 21—General Physics.....	10
 Elect one of the following:	
A. H. 1—Fundamentals of Animal Husbandry (3)	
Dairy 1—Fundamentals of Dairying (3)	
P. H. 1—Poultry Production (3)	
 Elect one of the following:	
Agron. 1—Crop Production (3)	
Hort. 5—Tree Fruit Production (3)	
Hort. 58—Vegetable Production (3)	
Hort. 59—Berry Production (3)	
Electives .....	4
 <i>Mechanical Engineering Option, 5th year</i> .....	 37
H. 5, 6—History of American Civilization.....	6
M. E. 150, 151—Heat Power, Chemical and Nuclear.....	8
M. E. 152, 153—Mechanical Engineering Design .....	7
M. E. 154, 155—Mechanical Laboratory .....	4
Approved Technical Electives.....	12

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<sup>1</sup> A qualifying test is given during registration to determine whether the student is adequately prepared for Math. 18. A student failing this test is required to take Math. 1, Introductory Algebra, without credit.

*Agronomy—Crops and Soils*

To be selected from the following:

M. E. 156—Heating and Air Conditioning.....	3
M. E. 157—Refrigeration .....	3
M. E. 158, 159—Applied Elasticity .....	6
M. E. 160, 161—Advanced Dynamics .....	6
M. E. 162, 163—Advanced Thermodynamics .....	6
M. E. 164—Research .....	3
M. E. 165—Creative Engineering .....	3
M. E. 166, 167—Advanced Fluid Mechanics.....	6

For the student whose final objective is a degree in electrical or chemical engineering, curricula corresponding to the foregoing will be arranged.

AGRONOMY—CROPS AND SOILS

The Department of Agronomy offers instruction in production and breeding of forage crops, cereal crops, and tobacco; weed control; soil chemistry; soil fertility; soil physics; soil classification; and soil conservation. A technical or a general curriculum may be elected by a student in either crops or soils. The technical curricula provide training in basic courses which will increase the students understanding of the applied crops and soils courses. Training in these basic courses is required for advanced work in agronomy and is desired by many employers of students graduating in agronomy.

General curricula in crops and soils permit the student to confine his training to applied courses but students following these curricula are encouraged to elect some of the basic courses included in the technical curricula.

Depending on the electives chosen, students graduating in agronomy are well prepared for advanced study, trained for general farming, farm management, specialized seed production, extension work, soil conservation, or employment with commercial seed, fertilizer, chemical or farm equipment companies. Additional information on opportunities in agronomy may be obtained by writing to the Department of Agronomy.

CROPS

*University Requirements (see page 11)*  
*College of Agriculture Requirements (see page 11)*

<i>Department of Agronomy Requirements:</i>	<i>Semester Credit Hours</i>
Agron. 10—General Soils .....	4
Agron. 101—Senior Seminar in Agronomy.....	1
Agron. 103—Crop Breeding .....	2
Agron. 107—Cereal Crop Production .....	3
Agron. 108—Forage Crop Production .....	3
Agron. 151—Cropping Systems .....	2
Agron. 154—Weed Control .....	3
Agron. —Advanced Soils Courses .....	6
Bot. 11—Plant Taxonomy .....	3

Bot. 20—Diseases of Plants.....	3
Bot. 101—Plant Physiology .....	4
Bot. 117—General Plant Genetics or	
Zool. 104—Genetics .....	2 or 3
Technical and General Courses for Crops Students (see explanation and lists below).....	29
Electives .....	12

#### TECHNICAL CROPS CURRICULUM

A minimum of 20 of the 29 hours of technical and general courses required above must be selected from the technical courses. If the student desires to take more than 29 hours of technical courses they can be used as part of his 12 hours of electives or they can be substituted for other Department of Agronomy requirements with permission of the crops adviser.

#### GENERAL CROPS CURRICULUM

Same as Technical Crops Curriculum except that the 20-hour minimum of courses from the technical group does not apply.

<i>Technical Courses Which May be Selected by the Crops Student</i>	<i>Semester Credit Hours</i>
Math. 10—Algebra .....	3
Math. 11—Trigonometry and Analytic Geometry.....	3
Math. 13—Elements of Mathematical Statistics.....	3
Math. 18, 19—Elementary Mathematical Analysis.....	5, 5
Math. 20, 21—Calculus .....	4, 4
Chem. 15—Qualitative Analysis .....	4
Chem. 19—Elements of Quantitative Analysis.....	4
Chem. 31, 33—Elements of Organic Chemistry .....	2, 2
Chem. 32, 34—Elements of Organic Laboratory .....	1, 1
Phys. 10, 11—Fundamentals of Physics.....	4, 4
Bot. 102—Plant Ecology .....	3
Bot. 111—Plant Anatomy .....	3
Agr. 100—Introductory Agricultural Biometrics.....	3
<i>General Courses Which May be Selected by the Crops Student</i>	
A. H. 1—Fundamentals of Animal Husbandry.....	3
A. H. 110—Feeds and Feeding .....	3
A. E. 50—Farm Economics .....	3
A. E. 108—Farm Management .....	3
Agr. Engr. 101—Farm Machinery .....	3
Ent. 1—Introductory Entomology .....	3
Ent. 20—Insect Pests of Agriculture Crops.....	4
Zool. 1—General Zoology .....	4
Geog. 40—Principles of Meteorology.....	3
Geog. 41—Introductory Climatology .....	3
Hort. 5—Fruit Production .....	3
Hort. 58—Vegetable Production .....	3
Agron.—Soils or crops courses not previously required.....	10

## Agronomy—Crops and Soils

### SOILS

University Requirements (see page 11)

College of Agriculture Requirements (see page 11)

#### Department of Agronomy Requirements:

Semester  
Credit Hours

Agron. 10—General Soils .....	4
Agron. 107—Cereal Crop Production .....	3
Agron. 108—Forage Crop Production .....	3
Agron. 114—Soil Classification and Geography.....	4
Agron. 116—Soil Chemistry .....	3
Agron. 117—Soil Physics .....	3
Agron.—Additional Advanced Soils courses.....	6
Bot. 101—Plant Physiology.....	4
Technical and general courses for soils students (see explanation and lists below).....	35
Electives .....	12

#### TECHNICAL SOILS CURRICULUM

A minimum of 30 of the 35 semester hours of technical and general courses required above must be selected from the technical group. If the student desires to take more than 35 semester hours of technical courses they can be used as part of his 12 hours of electives or they can be substituted for other Department of Agronomy requirements with permission of the soils adviser.

#### GENERAL SOILS CURRICULUM

Same as Technical Soils Curriculum except that the 30-hour minimum of courses from the technical group does not apply.

#### Technical Courses Which May be Selected by the Soils Student

Semester  
Credit Hours

Math. 10—Algebra .....	3
Math. 11—Trigonometry and Analytic Geometry.....	3
Math. 18, 19—Elements of Mathematical Analysis.....	5, 5
Math. 20, 21—Calculus .....	4, 4
Math. 64—Differential Equations for Engineers.....	3
Chem. 15—Qualitative Analysis .....	4
Chem. 19—Quantitative Analysis .....	4
Chem. 35, 37—Elementary Organic Chemistry .....	2, 2
Chem. 36, 38—Elementary Organic Laboratory .....	2, 2
Phys. 10, 11—Fundamentals of Physics or.....	4, 4
Phys. 20, 21—General Physics .....	5, 5
Agr. 100—Introductory Agricultural Biometrics.....	3

#### General Courses Which May be Selected by the Soils Student

A. H. 1—Fundamentals of Animal Husbandry.....	3
A. H. 110—Feeds and Feeding .....	3
A. E. 50—Farm Economics .....	3

A. E. 108—Farm Management .....	3
Agr. Engr. 101—Farm Machinery.....	3
Agr. Engr. 106—Farm Mechanics .....	2
Agr. Engr. 107—Farm Drainage and Irrigation.....	2
Zool. 1—General Zoology .....	4
Zool. 104—Genetics .....	3
Bot. 11—Plant Taxonomy .....	3
Bot. 20—Diseases of Plants.....	3
Bot. 102—Plant Ecology .....	3
Bot. 117—General Plant Genetics.....	2
Ent. 1—Introductory Entomology .....	3
Ent. 20—Insect Pests of Agricultural Crops.....	4
Geog. 40—Principles of Meteorology .....	3
Geog. 41—Introductory Climatology .....	3
Hort. 5—Fruit Production .....	3
Hort. 58—Vegetable Production .....	3
Microb. 135—Soil Microbiology .....	4
Agron.—Any advanced agronomy courses not previously required....	10

## ANIMAL HUSBANDRY

The curriculum in animal husbandry is organized for the purpose of preparing students for various phases of work in the field of animal industry such as: operators and managers of livestock farms, as investigators and research workers in federal, state, and private institutions, and as workers in specialized fields where a knowledge of the livestock industry is necessary.

By proper use of electives, the student may equip himself to become a county agricultural agent; to meet the requirements of positions with certain types of private and cooperative business concerns; or, with more technical and specialized training, to become qualified for instructional work in colleges, for investigational work in state and federal experiment stations or in commercial research laboratories. Students who desire to enter the field of teaching of highly specialized research should elect the more scientific course offered by this and by other departments.

*University Requirements (see page 11)*

*College of Agriculture Requirements (see page 11)*

<i>Department of Animal Husbandry Requirements:</i>	<i>Semester Credit Hours</i>
A. H. 1—Fundamentals of Animal Husbandry .....	3
A. H. 30—Types and Breeds of Livestock.....	3
A. H. 110—Feeds and Feeding .....	3
A. H. 111—Animal Nutrition .....	3
A. H. 120—Principles of Breeding .....	3
A. H. 130—Beef Cattle Production .....	3
A. H. 131—Sheep Production .....	3
A. H. 132—Swine Production .....	3
A. H. 140—Livestock Management <sup>1</sup> .....	3
A. H. 150—Livestock Markets and Marketing .....	2

<sup>1</sup> Required for students lacking farm experience.



	Semester Credit Hours
<i>Department of Animal Husbandry Requirements: (continued)</i>	
A. H. 160—Meat and Meat Products.....	3
A. H. 199A-B—Seminar .....	2
A. E. 108—Farm Management .....	3
Agron. 1—Crop Production .....	3
Agron. 10—General Soils .....	4
Agr. Engr. 101—Farm Machinery.....	3
Chem. 31, 33—Elements of Organic Chemistry.....	4
Chem. 32, 34—Elements of Organic Chemistry—laboratory .....	2
Dairy 1—Fundamentals of Dairy.....	3
Econ. 37—Fundamentals of Economics.....	3
Microb. 1—General Microbiology <sup>1</sup> .....	4
V. S. 101—Comparative Anatomy and Physiology.....	3
V. S. 102—Animal Hygiene .....	3
Elect one of the following:	
Zool. 104—Genetics (3)	
Bot. 117—Plant Breeding (2)	
Electives .....	8-9

## BOTANY

The Department offers three major fields of work: plant morphology, cytology, cytogenetics and taxonomy; plant pathology; and plant physiology and ecology. The required courses for the freshman and sophomore years are the same for all students. In the junior and senior years, the student elects botany courses to suit his particular interest. Courses are required in other subjects to contribute toward a broad cultural education, and to support the courses selected in the chosen field of botany.

The curriculum as outlined, provides a complete survey of the field of botany for prospective high school teachers, and lays a good foundation for graduate work in botany in preparation for college teaching and for research in state or federal experiment stations, or in private research laboratories.

Students are also afforded an opportunity for training for other vocations involving various botanical applications, such as extension work, and positions with seed companies, canning companies and other commercial concerns.

Students who wish to meet the requirements for certificates in secondary education may elect basic courses in education. An additional semester will usually be necessary to take certain courses in education, including the required practice teaching. As long as the demand continues, a series of advanced courses will be offered in rotation in the summer session especially for teachers working toward the degree Master of Education in science teaching.

<sup>1</sup> Required in addition to Zool. 1, General Zoology, and Bot. 1, General Botany.

University Requirements (see page 11)

College of Agriculture Requirements (see page 11)

	Semester Credit Hours
Department of Botany Requirements:	
Bot. 2—General Botany .....	4
Bot. 11—Plant Taxonomy .....	3
Bot. 20—Diseases of Plants .....	3
Bot. 101—Plant Physiology .....	4
Bot. 102—Plant Ecology .....	3
Bot. 111—Plant Anatomy .....	3
Bot. 117—General Plant Genetics .....	2
Modern Language, preferably German.....	12
Math. 10, 11.....	6
Microb. 1—General Microbiology .....	4
Zool. 1—General Zoology .....	4
Phys. 10, 11—Fundamentals of Physics.....	8
Botany electives .....	10
Electives .....	12

Students specializing in plant morphology or plant taxonomy will elect Bot. 114 and/or Bot. 128; those specializing in plant pathology will elect Bot. 122, Ent. 1, and two of the following: Bot. 123, Bot. 124, Bot. 125, Bot. 126; those specializing in plant physiology or plant pathology will elect Organic Chemistry, Chem. 31, 32, 33, 34.

## DAIRY

The Dairy Department offers instruction in two major lines of work; dairy husbandry and dairy technology. In the dairy husbandry curriculum, students are given technical and practical training in the breeding, feeding, management, and selection of dairy cattle and in milk production. With suitable choice of courses, students are qualified as operators of dairy farms, for breed promotion and sales work, or employment with private and cooperative business organizations, and for county agent work. The dairy technology curriculum is designed to prepare students for practical and scientific work concerned with the processing and distribution of milk, manufacture and handling of butter, cheese, ice cream, and other products, in dairy plant operation and management, and in dairy inspection and quality control. Students satisfactorily majoring in dairy technology are qualified for the many technical and applied positions in the various branches of the dairy industry.

By careful election of courses in either curriculum the student may lay a foundation for advanced study, for instructional work in colleges, and for research in experiment stations or commercial laboratories. The suggested curricula will be modified to meet the special needs of individual students.

## Dairy Curriculums

### DAIRY HUSBANDRY CURRICULUM

University Requirements (see page 11)

College of Agriculture Requirements (see page 11)

	Semester Credit Hours
<i>Dairy Department Requirements:</i>	
Agron. 1—Crop Production .....	3
Agron. 10—General Soils .....	4
A. H. 1—Fundamentals of Animal Husbandry.....	3
A. H. 110—Feeds and Feeding .....	3
A. H. 111—Animal Nutrition .....	3
Bot. 1—General Botany .....	4
Dairy 1—Fundamentals of Dairying.....	3
Dairy 20—Dairy Production .....	3
Dairy 102—Physiology of Reproduction .....	3
Dairy 103—Physiology of Milk Secretion .....	3
Dairy 105—Dairy Cattle Breeding .....	3
Dairy 199—Seminar .....	1
Microb. 1—General Microbiology .....	4
Microb. 133—Dairy Microbiology .....	4
V. S. 101—Comparative Anatomy and Physiology.....	3
V. S. 102—Animal Hygiene .....	3
Zool. 1—General Zoology .....	4
Zool. 104—Genetics .....	3
A. E. 115—Marketing Dairy Products.....	3
Elect at least 6 semester credits from the following (electives should form an organized unit):	
Chem. 31—Elements of Organic Chemistry (2)	
Chem. 32—Elements of Organic Chemistry Laboratory (1)	
Chem. 33—Elements of Organic Chemistry (2)	
Chem. 34—Elements of Organic Chemistry Laboratory (1)	
Chem. 35—Elementary Organic Chemistry (2)	
Chem. 36—Elementary Organic Chemistry Laboratory (2)	
Chem. 37—Elementary Organic Chemistry (2)	
Chem. 38—Elementary Organic Chemistry Laboratory (2)	
Electives .....	20

### DAIRY TECHNOLOGY CURRICULUM\*

	Semester Credit Hours
<i>Technical Phase</i>	
Agr. Engr. 111—Fundamentals of Food Processing.....	3
Bot. 1—General Botany .....	4
Chem. 19—Quantitative Analysis .....	4
Dairy 1—Fundamentals of Dairying .....	3
Dairy 40—Grading Dairy Products .....	2
Dairy 108—Dairy Technology .....	4
Dairy 109—Market Milk .....	4

\*Students may elect to take either the Technical or the Business Phase.

	Semester Credit Hours
<i>Technical Phase (continued)</i>	
Dairy 110—Concentrated Milk, Cheese and Butter.....	4
Dairy 112—Ice Cream Making .....	4
Dairy 116—Dairy Plant Management.....	3
Dairy 199—Dairy Seminar .....	1
Econ. 37—Fundamentals of Economics .....	3
Microb. 1—General Microbiology .....	4
Microb. 133—Dairy Microbiology .....	4
Phys. 1—Elements of Physics.....	3
Zool. 1—General Zoology .....	4
Elect at least 6 semester credits from the following (electives should form an organized unit):	
Chem. 31—Elements of Organic Chemistry (2)	
Chem. 32—Elements of Organic Chemistry Laboratory (1)	
Chem. 33—Elements of Organic Chemistry (2)	
Chem. 34—Elements of Organic Chemistry Laboratory (1)	
Chem. 35—Elementary Organic Chemistry (2)	
Chem. 36—Elementary Organic Chemistry Laboratory (2)	
Chem. 37—Elementary Organic Chemistry (2)	
Chem. 38—Elementary Organic Chemistry Laboratory (2)	
Elect one of the following:	
Math. 5—Business Algebra (3)	
Math. 10—Algebra (3)	
Electives .....	25
<i>Business Phase</i>	
A. E. 115—Marketing Dairy Products .....	3
Agr. Engr. 111—Fundamentals of Food Processing .....	3
Bot. 1—General Botany .....	4
B. A. 10—Organization and Control.....	2
B. A. 11—Organization and Control.....	2
B. A. 20—Principles of Accounting .....	4
Dairy 1—Fundamentals of Dairying.....	3
Dairy 40—Grading Dairy Products.....	2
Dairy 108—Dairy Technology .....	4
Dairy 109—Market Milk .....	4
Dairy 110—Concentrated Milk, Cheese and Butter.....	4
Dairy 112—Ice Cream Making.....	4
Dairy 116—Dairy Plant Management.....	3
Dairy 199—Dairy Seminar .....	1
Econ. 37—Fundamentals of Economics.....	3
Math. 5—Business Algebra .....	3
Microb. 1—General Microbiology .....	4
Microb. 133—Dairy Microbiology .....	4
Zool. 1—General Zoology .....	4
Elect an organized unit from the following of at least three credits:	
Chem. 31—Elements of Organic Chemistry (2)	
Chem. 32—Elements of Organic Chemistry Laboratory (1)	
Chem. 35—Elementary Organic Chemistry (2)	
Chem. 36—Elementary Organic Chemistry Laboratory (2)	
Electives .....	21

## ENTOMOLOGY

This curriculum prepares students for work in various types of entomological positions. Professional entomologists are engaged in fundamental and applied research, regulatory and control services with state and federal agencies, commercial pest control, sales and developmental programs with chemical companies and other commercial organizations, consulting work, extension work, and teaching.

A student wishing an undergraduate minor in entomology should take the introductory course (Ent. 1) and after consultation with the heads of both the major and minor departments will select courses that will contribute most to the end he has in view.

Most of the first two years of this curriculum is devoted to obtaining the essential background. In the junior and senior year there is opportunity for some specializing.

*University Requirements (see page 11)*

*College of Agriculture Requirements (see page 11)*

### *Department of Entomology Requirements:*

	<i>Semester Credit Hours</i>
Ent. 1—Introductory Entomology .....	3
Ent. 20—Insect Pests of Agricultural Crops.....	4
Ent. 105—Medical Entomology .....	3
Ent. 120—Insect Taxonomy and Biology.....	4
Ent. 198—Special Problems .....	2
Ent. 199—Seminar .....	2
Bot. 11—Plant Taxonomy .....	3
Bot. 20—Diseases of Plants.....	3
Microb. 1—General Microbiology.....	4

### *Elect 30 semester credits from the following:*

A. H. 1—Fundamentals of Animal Husbandry.....	3
Agr. 100—Introductory Agri. Biometrics .....	3
Agr. Engr. 102—Farm Engines and Tractors.....	3
Agron. 1—Crop Production .....	3
Agron. 10—General Soils .....	4
Bot. 117—General Plant Genetics.....	3
Chem. 31, 33—Elements of Organic Chemistry .....	4
Chem. 32, 34—Elements of Organic Chemistry Lab .....	2
Dairy 1—Fundamentals of Dairying.....	3
French 1, 2—Elementary French.....	6
German 1, 2—Elementary German.....	6
Math. 10—Algebra .....	3
Math. 11—Trigonometry and Analytic Geometry.....	3
Phys. 1—Elements of Physics .....	3
Phys. 2—Elements of Physics .....	3
Zool. 104—Genetics .....	3
Electives .....	19



## HORTICULTURE

The Department of Horticulture offers instruction in pomology (fruits), olericulture (vegetables), floriculture (flowers) and ornamental horticulture, and processing of horticultural crops. These courses prepare students to enter commercial production and the horticultural industries such as fruit and vegetable processing and seed production. Students are likewise prepared to enter the allied industries as horticultural workers with fertilizer companies, equipment manufacturers, and others. Students who wish to enter specialized fields of research and teaching may take advanced work in the Department.

### POMOLOGY AND OLERICULTURE CURRICULUM

*University Requirements (see page 11)*

*College of Agriculture Requirements (see page 11)*

	<i>Semester Credit Hours</i>
<i>Department of Horticulture Requirements:</i>	
Hort. 5, 6—Tree Fruit Production.....	3, 2
Hort. 58—Vegetable Production .....	3
Hort. 59—Berry Production .....	3
Hort. 101—Technology of Fruits.....	3
Hort. 103—Technology of Vegetables.....	3
Hort. 114—Systematic Horticulture .....	3
Hort. 161—Physiology of Maturation and Storage of Horticultural Crops .....	2
Hort. 199—Seminar .....	1
Bot. 20—Diseases of Plants.....	3
Bot. 101—Plant Physiology .....	4
Bot. 117—General Plant Genetics .....	2
Agron. 10—General Soils .....	4
Ent. 20—Insect Pests of Agricultural Crops.....	4
 Elect one of the following courses:	
Bot. 125—Diseases of Fruit Crops (2)	
Bot. 126—Diseases of Vegetable Crops (2)	
 Elect 7 semester credits from the following:	
Hort. 11—Greenhouse Management (3)	
Hort. 22—Landscape Gardening (2)	
Hort. 62—Plant Propagation (3)	
Hort. 107, 108—Woody Plant Materials (3, 3)	
Hort. 198—Special Problems (2, 2)	
Electives .....	28

## Horticulture Curriculum

### FLORICULTURE AND ORNAMENTAL HORTICULTURAL CURRICULUM

University Requirements (see page 11)

College of Agriculture Requirements (see page 11)

<i>Department of Horticulture Requirements:</i>	<i>Semester Credit Hours</i>
Hort. 11—Greenhouse Management .....	3
Hort. 16—Garden Management .....	3
Hort. 22—Landscape Gardening .....	2
Hort. 56—Elements of Landscape Design.....	2
Hort. 62—Plant Propagation .....	3
Hort. 105—Technology of Ornamentals.....	2
Hort. 107, 108—Woody Plant Materials.....	3, 3
Hort. 150, 151—Commercial Floriculture .....	3, 3
Hort. 152, 153—Landscape Design .....	3, 3
Hort. 199—Seminar .....	1
Bot. 11—Plant Taxonomy .....	3
Bot. 20—Diseases of Plants.....	3
Bot. 101—Plant Physiology .....	4
Bot. 117—General Plant Genetics.....	2
Bot. 123—Diseases of Ornamental Crops.....	2
Agron. 10—General Soils.....	4
Ent. 116—Insect Pests of Ornamental and Greenhouse Plants.....	3
Electives .....	22

### PROCESSING OF HORTICULTURAL CROPS CURRICULUM

University Requirements (see page 11)

College of Agriculture Requirements (see page 11)

<i>Department of Horticulture Requirements:</i>	<i>Semester Credit Hours</i>
Hort. 58—Vegetable Production .....	3
Hort. 61—Introduction to Fruit and Vegetable Processing.....	1
Hort. 101—Technology of Fruits .....	3
Hort. 103—Technology of Vegetables .....	3
Hort. 123—Quality Control .....	3
Hort. 124—Quality Control Systems .....	3
Hort. 155, 156—Fundamentals of Fruit and Vegetable Processing....	3, 3
Hort. 161—Physiology of Maturation and Storage of Horticultural Crops .....	2
Hort. 199—Seminar .....	1
Bot. 101—Plant Physiology .....	4
Chem. 31, 33—Elements of Organic Chemistry .....	2, 2
Chem. 32, 34—Elements of Organic Laboratory .....	1, 1
Agron. 10—General Soils .....	4
Phys. 1, 2—Elements of Physics.....	3, 3
Microb. 13—Food and Sanitary Microbiology.....	4
Agr. Engr. 111—Mechanics for Agricultural Processing.....	3
Agr. Engr. 112—Machinery and Equipment for Food Processing....	2

Department of Horticulture Requirements: (continued)

Elect 8 semester credits from the following:

Hort. 198—Special Problems (2, 2)

B. A. 150—Market Management (3)

B. A. 160—Personnel Management (3)

Chem. 19—Quantitative Analysis (4)

Electives ..... 15

## POULTRY HUSBANDRY

The curriculum in poultry husbandry is designed to give the student a thorough knowledge of subject matter necessary for poultry raising; the marketing, distribution, and processing of poultry products; poultry improvement work; and as a basis for graduate training of teaching and research in poultry husbandry.

The suggested curriculum will be modified to meet the special needs of individual students. Superior students, definitely anticipating preparation for a professional career in poultry husbandry, are encouraged to take a language. However, all students majoring in poultry husbandry will be required to complete 24 semester hours in poultry husbandry.

University Requirements (see page 11)

College of Agriculture Requirements (see page 11)

Department of Poultry Husbandry Requirements:

Semester  
Credit Hours

P. H. 1—Poultry Production .....	3
P. H. 3—Physiology of Hatchability.....	3
P. H. 101—Poultry Nutrition .....	3
P. H. 103—Commercial Poultry Management.....	3
P. H. 104—Technology of Market Eggs and Poultry.....	3
P. H. 105—Poultry Genetics .....	3
P. H. 109—Avian Physiology .....	3
Agron. 1—Crop Production .....	3
A. E. 117—Economics of Marketing Eggs and Poultry.....	3
Agr. 100—Introductory Agricultural Biometrics.....	3
Econ. 37—Fundamentals of Economics.....	3
Eng. 7—Technical Writing .....	2
Math. 5—General Mathematics .....	3
Microb. 1—General Microbiology.....	4
Phys. 1—Elements of Physics .....	3
Sp. 1, 2—Public Speaking.....	2, 2
V. S. 107—Poultry Hygiene .....	3
V. S. 108—Avian Anatomy .....	3
Zool. 104—Genetics .....	3
Chem. 31, 33—Elements of Organic Chemistry .....	2, 2
Chem. 32, 34—Elements of Organic Chemistry Laboratory .....	1, 1
Agriculture-Engineering Elective .....	2-3
Business Elective (B. A. 20, or 150, or 180).....	4, 3, 4
Electives .....	18

## SPECIAL CURRICULA

### PRE-FORESTRY STUDENTS

The College of Agriculture is glad to cooperate with any student who wishes to attend the University to pursue courses which may be transferred to a standard forestry curriculum in another institution. The program which a student follows depends to some extent upon the forestry college he plans to enter. All pre-forestry students in the College of Agriculture are sent to the Department of Botany of the University for counsel and advice in these matters.

### PRE-THEOLOGICAL STUDENTS

The College of Agriculture is glad to cooperate with the officers of any theological seminary who desire to urge its prospective students to pursue courses in agriculture as a preparation for the rural ministry. Such pre-theological students may enroll for a semester or more or for the usual four year training of the College. In either case they should enroll as members of the general curriculum in the College of Agriculture.

The electives of this curriculum may be used for such pre-theological requirements as seem desirable. Elections may be made from any of the offerings of the University such as history, political science, philosophy, agricultural economics, rural sociology, modern language, English, economics, psychology, sociology, natural science, education and the like. Students desiring to pursue a pre-theological program in the College of Agriculture of the University of Maryland, should consult with the president or admissions officer of the theological seminary which they expect to attend.

### PRE-VETERINARY STUDENTS

This program is designed for students desiring to prepare for the professional course in veterinary medicine.

A combined degree is available to students in pre-veterinary science. A student who has completed 90 academic semester credits at the University of Maryland and who has completed 30 additional academic semester credits at the University of Georgia or at any accredited veterinary school is eligible to make application for the Bachelor of Science degree from the University of Maryland.

The State of Maryland has entered a regional agreement with the State of Georgia which makes ten spaces a year available in the School of Veterinary Medicine, University of Georgia. The spaces are to be filled on a competitive basis from among qualified applicants.

Candidates, to be considered qualified, must have:

- a. Completed the curriculum shown below with grades not less than "C" in any subject;
- b. Taken the veterinary medical aptitude test; and
- c. Must be a bona fide resident of Maryland.

All requirements must be completed by June prior to the September in which the student desires to matriculate in veterinary college. The pre-veterinary curriculum can be completed in two years but may be extended, thus making it possible for the applicant to select desirable electives.

After the names of the candidates have been received, a Georgia Board of Admissions will assemble at the University of Maryland and will interview each candidate and receive the transcript and all pertinent documents relating to him. The selection will be made by the Office of Admissions, University of Georgia.

The pre-veterinary curriculum should contain:

	Semester Credit Hours
American Government .....	3
Biological Sciences .....	12
Botany (4)	
Zoology (8)	
English .....	9
Physical Sciences .....	26
Inorganic Chemistry (8)	
Organic Chemistry (6)	
Mathematics (6)	
Physics (6)	
Animal Science .....	9
Fundamentals of Animal Husbandry (3)	
Fundamentals of Dairying (3)	
Poultry Production (3)	
Air Science .....	8
Physical Education .....	4

#### SPECIAL STUDENTS IN AGRICULTURE

Mature students may, with the consent of the Dean, register as special students and pursue a program of studies not included in any regular curriculum, but arranged to meet the needs of the individual. All University fees for these special students are the same as fees for regular students.

There are many young farmers who desire to take short intensive courses in their special lines of work during slack times on the farm. Arrangements have been made to permit such persons to register at the office of the Dean of the College of Agriculture and receive cards granting them permission to visit classes and work in the laboratories of the different departments. This opportunity is created to aid florists, poultrymen and fruit-growers, gardeners, or other especially interested persons who are able to get away from their work at some time during the year.

The regular charges are \$10.00 for matriculation and \$2.00 per credit hour per month for the time of attendance. One matriculation is good for any amount of regular or intermittent attendance during a period of four years.



## *Special Curricula*

### TWO-YEAR PROGRAM IN AGRICULTURE

The objective of the two-year program is to offer a course of study to students desiring to study agriculture in college but who may be able to spend not over two years in college. This program offers training to prepare students to return to the farm or for employment in related agricultural business and industry.

Students in the two-year program will be admitted to the College of Agriculture under established University entrance requirements. Students in this program will be required to take Basic Air Science (8 hours), physical activities (4 hours) and basic sciences pertinent to agriculture. Other courses may be elected according to the specific interest of the student. Each student will be assigned to an adviser to assist him in developing a program of study.

## COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters.

Courses not otherwise designated are lecture courses. The number of credit hours is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

## AGRICULTURE

### *Agr. 1. Introduction to Agriculture. (1)*

First semester. Required of all beginning freshmen and sophomores in agriculture. Other students must get the consent of the instructor. A series of lectures introducing the student to the broad field of agriculture. (Poffenberger.)

### *Agr. 100. Introductory Agricultural Biometrics. (3)*

First semester. Two lectures and one laboratory period per week. Introduction to fundamental concepts underlying the application of biometrical methods to agricultural problems with emphasis on graphical presentation of data, descriptive statistics, chi-square and t-tests, and linear regression and correlation. (Schultz.)

### *Agr. 200. Agricultural Biometrics. (3)*

Second semester. Two lectures and one laboratory period per week. Prerequisite, Agr. Biom. 100 or equivalent. A continuation of Agr. 100 with emphasis on analysis of variance and co-variance, multiple and curvilinear regression, sampling, experimental design and miscellaneous statistical techniques as applied to agricultural problems. (Schultz.)

### *Agr. 202, 203. Advanced Biological Statistics. (2, 2)*

First and second semesters. Prerequisite, approval of instructor. An advanced course dealing with specialized experimental designs, sampling techniques and elaborations of standard statistical procedures as applied to the animal and plant sciences. (Schultz.)

## AGRICULTURAL ECONOMICS

*Professors:* POFFENBERGER, BEAL AND WALKER.

*Visiting Professor:* TAYLOR.

*Associate Professors:* HAMILTON AND SMITH.

*Assistant Professors:* ISHEE, SWOPE AND WYSONG.

*Instructor:* NUCKOLS.

### A. E. 50. *Farm Economics.* (3)

Second semester. Prerequisite, Econ. 37. A general course in agricultural economics, with special reference to population trends, the factors in agricultural production, agricultural wealth, land tenure, farm labor, agricultural credit, the tariff, price movements, and marketing. (Swope.)

### *For Advanced Undergraduates and Graduates*

### A. E. 101. *Marketing of Farm Products.* (3)

First semester. Prerequisite, Econ. 31, 32, or Econ. 37. The development of marketing, its scope, channels, and agencies of distribution, functions, costs, methods used and services rendered. (Swope.)

### A. E. 103. *Cooperation in Agriculture.* (3)

First semester. (Offered 1961-62.) Historical and comparative development of farmers' cooperative organizations; reasons for failure and essentials to success; commodity developments; operative practices; banks for cooperatives; present trends. (Smith.)

### A. E. 104. *Farm Finance.* (3)

Second semester. (Offered 1960-61.) A study of credit principles as applied to private and cooperative farm business and the agencies extending farm credit. The needs for the benefits of farm insurance, including fire, crop, livestock, and life insurance. (Ishee.)

### A. E. 106. *Prices of Farm Products.* (3)

Second semester. A general course in prices, price relationships, and price analysis, with emphasis on prices of agricultural products. (Wysong.)

### A. E. 107. *Analysis of the Farm Business.* (3)

First semester. A concise, practical course in the keeping, summarizing, and analyzing of farm accounts. (Hamilton.)

### A. E. 108. *Farm Management.* (3)

Second semester. A study of the organization and operation of farms from the standpoint of efficiency, selection of farms, size of farms, leasing systems, and factors affecting profits. Students will make an analysis of the actual farm business and practices of different types of farms, and make specific recommendations as to how these farms may be organized and operate as successful businesses. (Hamilton.)

### A. E. 111. *Land Economics.* (3)

First semester. (Offered 1961-62.) A study of the principles, problems and policies in the utilization of land with special emphasis on agricultural land. (Ishee.)

*A. E. 112. Economic Development of American Agriculture. (3)*

First semester. (Offered 1960-61.) This course is designed to acquaint students with major economic development in American agriculture. It places particular emphasis upon the economic impact of major agricultural movements, such as, colonial agrarianism, the disposition of the public domain, farm organizations, recent governmental farm programs and the relationship of agriculture to public affairs. (Smith.)

*A. E. 114. Foreign Trade in Farm Products. (3)*

First semester. (Offered 1961-62.) Economic principles in historical setting, trade barriers, foreign exchange problems, measures to promote trade, past and prospective trends of American imports and exports of farm products. (Taylor.)

*A. E. 115. Marketing of Dairy Products. (2)*

First semester. (Offered 1960-61.) A study of principles and practices in the marketing of milk and manufactured dairy products, including the influence of significant geographical and institutional relationships on costs and methods of distribution. (Beal.)

*A. E. 116. Marketing of Fruits and Vegetables. (2)*

Second semester. (Offered 1960-61.) A study of principles and practices in the marketing of fresh and processed fruits and vegetables, including the influence of significant geographical and institutional relationships on costs and methods of distribution. (Swope.)

*A. E. 117. Economics of Marketing Eggs and Poultry. (3)*

Second semester. (Offered 1961-62.) This course embraces the economic phases of egg and poultry marketing. Supply and demand factors, including trends, will be discussed along with marketing methods, marketing costs and margins, market facilities, transportation, government grading, storage and efficiency in marketing. Consumer preference, acceptance and purchases will be related to consumer income, pricing of competitive products and display methods. (Smith.)

*A. E. 118. Foreign Agricultural Policies. (3)*

Second semester. This course deals with how the agricultural policies of the United States and foreign countries of major agricultural importance are formulated and conducted. Specific policies are evaluated. The effect of various incentives and barriers to American exports and imports of agricultural products is appraised with the assistance of visiting discussion leaders working at the policy level in the United States and other major agricultural countries. (Taylor.)

*A. E. 119. Foreign Agricultural Economics. (3)*

First semester. This course deals with differences between the agricultural economies of several countries and their significance to world-wide production, trade, and consumption of the agricultural products of major importance to the United States. Special emphasis is given to the roles of institutional and governmental arrangements. (Taylor.)

*A. E. 198. Research Problems. (1-2) (2 cr. max.)*

First and second semesters. With the permission of the instructor, students will work on any research problems in agricultural economics. There will be occasional class meetings for the purpose of making reports on progress of work. (Staff.)

## *Agricultural Economics*

### *A. E. 199A-B. Seminar. (1, 1)*

First and second semesters. Students will prepare and present reports on economic literature and current agricultural economic problems. (Hamilton.)

### *Technology of Market Eggs and Poultry.*

See Poultry Husbandry, P. H. 104.

### *Poultry Industrial and Economic Problems.*

See Poultry Husbandry, P. H. 107.

### *Market Milk.*

See Dairy 109.

### *Livestock Markets and Marketing.*

See Animal Husbandry, A. H. 150.

### *Meat and Meat Products.*

See Animal Husbandry, A. H. 160.

### *Advertising.*

See Business Administration, B. A. 151.

### *Retail Store Management.*

See Business Administration, B. A. 154.

## *For Graduates*

### *A. E. S207. Farm Business Analysis. (1)*

Summer session only. An advanced course dealing with farm records and accounts. Designed especially for teachers of agriculture and county agents. (Hamilton.)

### *A. E. 208. Agricultural Policy. (3)*

Second semester. The evolution of agricultural policy in the United States, emphasizing the origin and development of governmental programs, and their effects upon agricultural production, prices and income. (Beal.)

### *A. E. 210. Agricultural Taxation. (3)*

First semester. (Offered 1960-61.) Principles, theory and practical problems of taxation applied to the field of agriculture; trends in farm taxes; farm tax burdens; equalizing and reducing farm tax burdens; taxation of farm cooperatives; forest lands and interstate agricultural commerce; application of income taxes and sales taxes to farmers; taxation of agriculture in foreign countries. (Walker.)

### *A. E. 211. Functional Aspects of Farm Taxation. (3)*

Second semester. (Offered 1961-62.) Two lectures and one laboratory period a week. Taxation policies and inter-governmental allocations and grants-in-aid as they affect public services for rural people, with special emphasis on public education, public highways, public welfare, social security, public debt; and governmental research, extension, and regulatory activities directly concerning agriculture. (Walker.)



*A. E. 214. Advanced Agricultural Marketing. (3)*

Second semester. Advanced study of the complex theoretical, institutional and legal factor governing both domestic and foreign agricultural trade, with particular attention given to policies and practices affecting cost and price. (Beal.)

*A. E. 216. Advanced Farm Management. (3)*

Second semester. An advanced course in farm organization and management which applies the economic principles of farm production to the operation of farms of different sizes, types, operations, and geographical locations. Consideration is also given to adjustments which have taken place in farming specific areas and probable changes in the future. (Ishee.)

*A. E. S216 A-B. Advanced Farm Management. (1, 1)*

Summer session only. An advanced course in farm organization and management, especially designed for teachers of vocational agriculture. (Hamilton.)

*A. E. 218. Agricultural Economics Research Techniques. (3)*

First semester. A study and an appraisal of agricultural economics research techniques. Experience is given in outlining and conducting research projects. A critical appraisal is made of methods of analysis and the presentation of results. (Beal.)

*A. E. 219. Advanced Land Economics. (3)*

Second semester. A critical analysis of the principles and problems in issuing and controlling land resources, including a review of land policies, is given, with special consideration being placed on the problems of submarginal lands, range lands, and water resources. Conservation of various land resources is appraised, problems of landed property are presented; and criteria essential to the development of a sound land policy are studied. (Ishee.)

*A. E. 220. World Agricultural Production. (3)*

First semester. A world-wide appraisal of the economic significance of the growth of population, changes in food and fiber requirements, development of land resources, development of crop and livestock productivity, substitute or supplementary products from factory and sea the economic imbalance between developed and under-developed countries, financial and social limitations, and organized international agricultural development activities. (Taylor.)

*A. E. 301. Special Problems in Farm Economics. (2) (4 cr. max.)*

First and second semesters. An advanced course dealing extensively with some of the economic problems affecting the farmer, such as land values, taxation, credit, prices, production adjustments, transportation, marketing, and cooperation. (Staff.)

*A. E. 302. Seminar. (1) (4 cr. max.)*

First and second semesters. Students will be assigned research in agricultural economics under the supervision of the instructor. The work will consist of original investigation in problems of agricultural economics. (Staff.)

*A. E. 399. Research.*

Credit according to work accomplished. This course will consist of special reports by students on current economic subjects, and a discussion and criticism of the same by the members of the class and instructional staff. (Staff.)

# AGRICULTURAL EDUCATION AND RURAL LIFE

Professor: WARNER.

Assistant Professors: HOPKINS AND SMITH.

## *For Advanced Undergraduates*

### *R. Ed. 101. Teaching Farm Practicums and Demonstrations. (2)*

First semester. Two laboratory periods a week. This course is designed to assist the student in relating the learning acquired with the problems of doing and demonstrating which he faces in the field and in the classroom as a teacher of agriculture.

(Smith.)

### *R. Ed. 103. Practice Teaching. (5)*

First semester. Open only to students majoring in agricultural education who have a satisfactory scholastic average. Five weeks, full time. Under the direction of a supervising teacher and the supervision of a teacher-trainer the student is required to analyze and prepare special units of subject matter in agriculture, plan and teach lessons, supervise farming programs of students and otherwise perform the duties of a high school teacher of vocational agriculture. Not less than 125 clock hours, exclusive of observation, shall be required.

(Hopkins.)

### *R. Ed. 104. Practice Teaching. (1-4)*

First and second semesters. Registration concurrent or after R. Ed. 103. One to four weeks full time. To provide students an opportunity to gain experience in farming program supervision, the opening of school, and in other teaching activities not generally a part of R. Ed. 103.

(Hopkins.)

### *R. Ed. S108 A-B. Problems in Teaching Farm Mechanics. (1-1)*

Summer session only. The latest developments in the teaching of farm mechanics. Various methods in use will be compared and studied under laboratory conditions.

### *R. Ed. 161. 4-H Organization and Procedure. (2)*

A study of the youth phase of cooperative and extension work. Emphasis is placed on the philosophy, objectives, organization, leadership development and methods used in conducting 4-H Club work at the local and county level.

### *R. Ed. 198. Special Problems in Agricultural Education. (1-3)*

First and second semesters. Summer session. Prerequisite, approval of staff. Credit in accordance with amount of work planned. A course designed for advanced undergraduates for problems in teaching vocational agriculture.

(Staff.)

### *R. Ed. S199 A-B. Seminar in Agricultural Education. (1-1)*

Summer session only. Investigations, reports and papers on the organization and administration of agricultural education.

(Hopkins, Smith.)

## *For Advanced Undergraduates and Graduates*

### *R. Ed. 107. Observation and Analysis of Teaching Agriculture. (3)*

Second semester. Two lectures and one laboratory period a week. This course deals with an analysis of pupil learning in class groups.

(Smith.)

*R. Ed. 109. Teaching Secondary Vocational Agriculture. (3)*

First semester. A comprehensive course in the work of high school departments of vocational agriculture. It emphasizes particularly placement, supervised farming programs, the organization and administration of Future Farmer activities, and objectives and methods in all-day instruction. (Hopkins, Smith.)

*R. Ed. 111. Teaching Young and Adult Farmer Groups. (1)*

First semester. Characteristics of young and adult farmer instruction in agriculture. Determining needs for and organizing a course; selecting materials for instruction; and class management. Emphasis is on the conference method of teaching. (Smith.)

*R. Ed. 112. Departmental Management. (1)*

Second semester. One laboratory period a week. Prerequisites, R. Ed. 107 and 109, or permission of the Head of the Department. The analysis of administrative programs for high school departments of vocational agriculture. Investigations and reports. (Hopkins, Smith.)

*R. Ed. 114. Rural Life and Education. (3)*

Second semester. An intensive study of the educational agencies at work in rural communities, stressing an analysis of school patronage areas, the possibilities of normal life in rural areas, early beginnings in rural education, and the conditioning effects of educational offerings.

*R. Ed. 150. Extension Education. (2)*

Second semester. The Agricultural Extension Service as an educational agency. The history, philosophy, objectives, policy, organization, legislation and methods used in extension work. (Warner.)

*R. Ed. 160. Agricultural Communications. (2)*

First semester. A general introduction to communications and the application of communication principles and problems of teaching agricultural workers, person to person, with groups and through mass media. (Warner.)

*R. Ed. 170 A-B. Workshop Teaching Conservation of Natural Resources. (3-3)*

Fee, \$25.00. This workshop is devoted to a study of the state's basic wealth, its natural resources, natural resource problems and practices pertinent to local, state, national and world welfare.

*For Graduates*

*R. Ed. 201. Rural Life and Education. (3)*

First semester. (Given in accordance with demand, but not more often than alternate years.) Prerequisite, R. Ed. 114 or equivalent. A sociological approach to rural education as a movement for a good life in rural communities. (Smith.)

*R. Ed. 203. Farm Organizations and Rural Education. (3)*

Second semester. (Given in accordance with demand, but not more often than alternate years.) Prerequisite, R. Ed. 114 or equivalent. The part played by farm organizations in formal and informal education in the rural community. (Hopkins.)

## *Agricultural Education and Rural Life*

### *R. Ed. 207, 208. Problems in Vocational Agriculture. (2, 2)*

First and second semesters. (Given in accordance with demand, but not more often than alternate years.) In this course special emphasis is placed upon the current problems facing teachers of vocational agriculture. It is designed especially for persons who have had several years of teaching experience in this field. (Smith, Hopkins.)

### *R. Ed. S207 A-B. Problems in Teaching Vocational Agriculture. (1-1)*

Summer session only. A critical analysis of current problems in the teaching of vocational agriculture with special emphasis upon recent developments in all-day programs. (Hopkins, Smith.)

### *R. Ed. S209 A-B. Adult Education in Agriculture. (1-1)*

Summer session only. Principles of adult education as applied to rural groups, especially young and adult farmers. Organizing classes, planning courses and instructional methods are stressed. (Staff.)

### *R. Ed. S210 A-B. The Land Grant College System. (1-1)*

Summer session only. Development of Land Grant colleges and the role they have played in improving rural conditions. (Staff.)

### *R. Ed. S213 A-B. Supervision and Administration of Vocational Agriculture. (1-1)*

Summer session only. Administrative and supervisory problems in vocational agriculture including scheduling, local administrative programs, supervisor-teacher relationships and the responsibilities of superintendents and principals in the program. (Hopkins.)

### *R. Ed. 215. Supervision of Student Teaching. (1)*

Arranged. (Given in accordance with demand, but not more often than alternate years.) The role of the supervising teacher in checking progress, supervising and grading student teachers. Particular emphasis will be given to the region-wide program in training teachers of vocational agriculture, including the evaluation of beginning teachers. (Hopkins.)

### *R. Ed. 240. Agricultural College Instruction. (1)*

Second semester. (Given in accordance with demand, but not more than alternate years.) Open to graduate students and members of the faculty in the College of Agriculture. A seminar type of course consisting of reports, discussions, and lectures dealing with the techniques and procedures adapted to teaching agricultural subjects at the college level. (Staff.)

### *R. Ed. S250 A-B. Critique in Rural Education. (1-1)*

Summer session only. Current problems of teaching agriculture are analyzed and discussed. Students are required to make investigations, prepare papers and make reports. (Hopkins, Smith.)

### *R. Ed. 301. Field Problems in Rural Education. (1-3)*

First and second semesters. Summer session. Prerequisite, six semester hours of graduate study. Problems accepted depend upon the character of the work of the student and the facilities available for study. Periodic conferences required. Final report must follow accepted pattern for field investigations. (Staff.)



*R. Ed. 302. Seminar in Rural Education. (1, 1)*

First and second semesters. Problems in the organization, administration, and supervision of the several agencies of rural education. Investigations, papers, and reports.  
(Hopkins, Smith.)

*R. Ed. 399. Research.*

First and second semesters. Summer session. Credit hours according to work done.  
(Staff.)

## AGRICULTURAL ENGINEERING

*Professor: GREEN.*

*Associate Professor: GIENGER.*

*Assistant Professor: MATTHEWS.*

*Agr. Engr. 2. Seminar. (no credit)*

First semester. One hour per week. Required of all students upon registration in agricultural engineering curriculum. A series of discussions on applications of engineering sciences in agriculture.  
(Staff.)

*Agr. Engr. 56. Introduction to Farm Mechanics. (2)*

Second semester. One lecture and one laboratory period a week. Laboratory fee, \$3.00. A study of the hand tools and power equipment and their safe use as it applies to mechanized farms. Principles and practice in arc and gas welding, cold metal and sheet metal work are provided. Also, tool fitting, woodworking, plumbing, blue print reading and use of concrete.  
(Gienger.)

### *For Advanced Undergraduates*

*Agr. Engr. 199. Seminar. (1)*

Second semester. Prerequisite, permission of Department. Advanced undergraduates will review literature, present reports and discuss topics in agricultural engineering.  
(Staff.)

### *For Advanced Undergraduates and Graduates*

*Agr. Engr. 101. Agricultural Machinery. (2)*

First semester. Two lectures per week. Concurrent registration in Agr. Engr. 121 or 131 required. Materials and construction of agricultural machinery with particular reference to functions of unit assemblies and complete machines, and factors affecting their adaptation and management.  
(Matthews.)

*Agr. Engr. 102. Agricultural Tractors and Power Units. (2)*

Second semester. Two lectures per week. Concurrent registration in Agr. Engr. 122 or 132 required. Principles of internal combustion engines and fundamentals of power transmission and control mechanisms in self-propelled or stationary units.  
(Matthews.)



## *Agricultural Engineering*

### *Agr. Engr. 104. Farm Mechanics. (2)*

First semester. Two laboratory periods a week. Laboratory fee, \$3.00. Available only to seniors in agricultural education. This course consists of laboratory exercises in practical farm shop and farm equipment maintenance, repair, and construction projects; and a study of the principles of shop organization and administration.

(Gienger.)

### *Agr. Engr. 105. Farm Structures. (2)*

First semester. Two lectures per week. Concurrent registration in Agr. Engr. 135 required for students in agricultural engineering curriculum. Functional and environmental requirements of farm structures are stressed. Characteristics of materials and structural details of conventional types of construction are included.

(Matthews.)

### *Agr. Engr. 107. Soil and Water Conservation Engineering. (1)*

Second semester. One lecture per week. Concurrent registration in Agr. Engr. 127 or 137 required. Applications of engineering sciences in erosion control, drainage, irrigation, and watershed management.

(Green.)

### *Agr. Engr. 109. Farm Applications of Electricity. (1)*

Second semester. One lecture per week. Concurrent registration in Agr. Engr. 129 or 139 required. Applications of electricity for lighting, heating, cooling or power and characteristics of motors and equipment considered in design to meet requirements.

(Matthews.)

### *Agr. Engr. 111. Mechanics for Agricultural Processing. (3)*

First semester. (Not offered 1960-61.) Two lectures and one laboratory period a week. A study of the fundamentals of physics and mechanics and how they are applied in agriculture. Included are the basic laws and applications of mechanics, power transmission, heat and heat transfer, fluid flow, refrigeration, instruments, and lighting.

(Matthews.)

### *Agr. Engr. 112. Machinery and Equipment for Food Processing. (2)*

Second semester. (Not offered 1960-61.) One lecture and one laboratory period a week. Prerequisite, Agr. Engr. 111. A study of the mechanical and engineering operations pertaining to food processing plants. Emphasis is placed on machinery and equipment for processing methods, plant sanitation, plant maintenance, and materials handling. Plant layout and design is also included.

(Matthews.)

### *Agr. Engr. 121. Agricultural Machinery Laboratory. (1)*

First semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 101 required. Studies of operating characteristics, adjustments and where applicable, calibration of current models of machinery.

(Matthews.)

### *Agr. Engr. 122. Agricultural Tractors and Power Laboratory. (1)*

Second semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 102 required. Studies of power unit components as related to overall engine and tractor performance.

(Matthews, Gienger.)

### *Agr. Engr. 127. Soil and Water Conservation Laboratory. (1)*

Second semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 107 required. Simple surveying and use of level for erosion control, irrigation and drainage.

(Green.)

*Agr. Engr. 129. Farm Electrification Laboratory. (1)*

Second semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 109 required. Layout and design of farmstead wiring plans together with essentials of wiring practices. (Staff.)

*Agr. Engr. 131. Agricultural Machinery Design Laboratory. (1)*

First semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 101 required. Prerequisite, C. E. 24 or M. E. 24. A study of design factors and force analysis including design of simple units. (Staff.)

*Agr. Engr. 132. Farm Power Analysis Laboratory. (1)*

Second semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 102 required. Prerequisite, M. E. 100. Determination of efficiency of internal combustion engines, forces and moments of tractor loading, and stability. Engineering aspects of hydraulic control systems and power transmissions are included. (Staff.)

*Agr. Engr. 135. Farm Structures Design Laboratory. (1)*

First semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 105 required. Prerequisite, C. E. 160. Design of structures with emphasis on functional and environmental requirements for agriculture. (Staff.)

*Agr. Engr. 137. Soil and Water Conservation Engineering Laboratory. (1)*

Second semester. One three-hour laboratory per week. Prerequisites, C. E. 110 and C. E. 140 or M. E. 102. Hydraulic design of water conveyance systems for erosion control, drainage and irrigation. (Green.)

*Agr. Engr. 139. Farm Electrification Engineering Laboratory. (1)*

Second semester. One three-hour laboratory period per week. Concurrent registration in Agr. Engr. 109. Prerequisite, E. E. 52. Study of farmstead electrical loads and the design of distribution networks therefor. (Staff.)

*Agr. Engr. 198. Special Problems in Farm Mechanics. (1-3)*

First and second semesters. Prerequisite, approval of Department. Not acceptable for majors in agricultural engineering. Problems assigned in proportion to credit registered for. (Gienger.)

For Graduates

*Agr. Engr. 201. Special Topics in Agricultural Engineering. (3)*

First and second semesters. Two lectures and one laboratory period per week. Timely topics in specialized areas of agricultural engineering will be selected as needed by graduate students; for example, Instrumentation for Agricultural Engineering Research. (Staff.)

*Agr. Engr. 301. Special Problems in Agricultural Engineering. (1-6)*

First and second semesters. Summer session. Work assigned in proportion to amount of credit. (Staff.)

*Agr. Engr. 302. Seminar. (1, 1)*

First and second semesters. Prerequisite, permission of instructor. (Staff.)

*Agr. Engr. 399. Research. (1-6)*

Credit according to work accomplished. (Staff.)

## AGRONOMY—CROPS AND SOILS

*Professor:* STREET.

*Associate Professors:* AXLEY, BOURBEAU, DECKER, LEFFEL AND STRICKLING.

*Assistant Professors:* CLARK, KRESGE, MEADE, MILLER, NEWCOMER AND SANTELMANN.

### CROPS

#### *Agron. 1. Crop Production. (3)*

Second semester. Two lectures and one laboratory period a week. Culture, use, improvement, adaptation, distribution, and history of field crops. (Santelmann.)

### *For Advanced Undergraduates and Graduates*

#### *Agron. 103. Crop Breeding. (2)*

Second semester, alternate years. (Offered 1960-61.) Prerequisite, Bot. 117 or Zool. 104. Principles and methods of breeding annual self and cross-pollinated plants and perennial forage species. (Leffel.)

#### *Agron. 104. Tobacco Production. (3)*

Second semester. Three lectures a week. Prerequisite, Bot. 1. A study of the history, adaptation, distribution, culture, and improvement of various types of tobacco, with special emphasis on problems in Maryland tobacco production. Physical and chemical factors associated with yield and quality of tobacco will be stressed. (Street.)

#### *Agron. 107. Cereal Crop Production. (3)*

First semester, alternate years. (Offered 1960-61.) Two lectures and one laboratory period a week. Prerequisite, Bot. 1. Study of the principles and practices of corn, wheat, oats, barley, rye, and soybean production. (Clark.)

#### *Agron. 108. Forage Crop Production. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. Study of the production and management of grasses and legumes for quality hay, silage and pasture. (Decker.)

#### *Agron. 109. Turf Management. (2)*

First semester, alternate years. (Offered 1961-62.) Two lectures a week. Prerequisite, Bot. 1. A study of principles and practices in management of turf for lawns, athletic fields, playgrounds, airfields, and highway planting.

#### *Agron. 151. Cropping Systems. (2)*

Second semester. Two lectures a week. Prerequisite, Agron. 1 or equivalent. The coordination of information from various courses in the development of balanced cropping systems, appropriate to different objectives in various areas of the state and nation.

*Agron. 152. Seed Production and Distribution. (2)*

First semester, alternate years. (Offered 1960-61.) One lecture and one laboratory period a week. Prerequisite, Agron. 1 or equivalent. A study of seed production, processing, and distribution; federal and state seed control programs; seed laboratory analyses; release of new varieties and maintenance of foundation seed stocks.

(Newcomer.)

*Agron. 154. Weed Control. (3)*

First semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. Prerequisite, Agron. 1 or equivalent. A study of the use of cultural practices and chemical herbicides in the control of weeds in field crops and turf.

(Santelmann.)

Additional courses under CROPS AND SOILS.

*For Graduates*

*Agron. 201. Advanced Crop Breeding. (2)*

First semester, alternate years. (Offered 1961-62.) Prerequisite, Agron. 103 or equivalent. Genetic, cytogenetic, and statistical theories underlying methods of plant breeding. A study of quantitative inheritance, heterosis, heritability, interspecific and intergeneric hybridization, polyploidy, sterility mechanisms, inbreeding and outbreeding, and other topics as related to plant breeding.

(Leffel.)

*Agron. 204. Technic in Field Crop Research. (2)*

Second semester, alternate years. (Offered 1960-61.) Field plot technic, application of statistical analysis to agronomic data, and preparation of the research project.

(LeClerg.)

*Agron. 205. Advanced Tobacco Production. (2)*

First semester, alternate years. (Offered 1961-62.) Two lectures a week. Prerequisite, permission of instructor. A study of the structural adaptation and chemical response of tobacco to environmental variations. Emphasis will be placed on the alkaloids and other unique components.

(Street.)

*Agron. 207. Advanced Forage Crops. (2)*

First semester, alternate years. (Offered 1960-61.) Two lectures a week. Prerequisites, Bot. 101, Chem. 31 and 32, or equivalent, or permission of instructor. A fundamental study of physiological and ecological responses of grasses and legumes to environmental factors, including fertilizer elements, soil moisture, soil temperature, air temperature, humidity, length of day, quality and intensity of light, wind movement, and defoliation practices. Relationship of these factors to life history, production, chemical and botanical composition, quality, and persistence of forages will be considered.

(Decker.)

*Agron. 208. Research Methods. (2)*

Second semester. Prerequisite, permission of staff. Development of research viewpoint by detailed study and report on crop research of the Maryland Experiment Station or review of literature on specific phases of a problem.

(Staff.)



## *Agronomy—Crops and Soils*

### *Agron. S210. Cropping Systems. (1)*

Summer session only. An advanced course primarily designed for teachers of vocational agriculture and county agents. It deals with outstanding problems and the latest developments in the field.

Additional courses under CROPS AND SOILS.

### SOILS

### *Agron. 10. General Soils. (4)*

Second semester. Three lectures and one laboratory period each week. Prerequisite, Chem. 1 or permission of instructor. A study of the fundamentals of soils including their origin, development, relation to natural sciences, effect on civilization, physical properties, and chemical properties. (Kresge.)

## *For Advanced Undergraduates and Graduates*

### *Agron. S110. Soil Management. (1)*

Summer session only. An advanced course primarily designed for teachers of vocational agriculture and county agents dealing with factors involved in management of soils in general and of Maryland soils in particular. Emphasis is placed on methods of maintaining and improving chemical, physical, and biological characteristics of soils. (Strickling.)

### *Agron. 111. Soil Fertility Principles. (3)*

First semester, alternate years. (Offered 1960-61.) Three lectures a week. Prerequisite, Agron. 10. A study of the chemical, physical, and biological characteristics of soils that are important in growing crops. Soil deficiencies of physical, chemical, or biological nature and their correction by the use of lime, fertilizers, and rotations are discussed and illustrated. (Strickling.)

### *Agron. 112. Commercial Fertilizers. (3)*

Second semester. Three lectures a week. Prerequisite, Agron. 10 or permission of instructor. A study of the manufacturing and distribution of commercial fertilizers. (Axley.)

### *Agron. 113. Soil Conservation. (3)*

First semester, alternate years. (Offered 1960-61.) Two lectures and one laboratory period a week. Prerequisite, Agron. 10 or permission of instructor. A study of the importance and causes of soil erosion, and methods of soil erosion control. Special emphasis is placed on farm planning for soil conservation. The laboratory period will be largely devoted to field trips. (Miller.)

### *Agron. 114. Soil Classification and Geography. (4)*

Second semester. Three lectures and one laboratory period a week. Prerequisite, Agron. 10, or permission of instructor. A study of the genesis, morphology, classification and geographic distribution of soils. The broad principles governing soil formation are explained. Attention is given to the influence of geographic factors on the development and use of the soils in the United States and other parts of the world. The laboratory periods will be largely devoted to field trips and to a study of soil maps of various countries. (Bourbeau.)



*Agron. 116. Soil Chemistry. (3)*

First semester, alternate years. (Offered 1960-61.) One lecture and two laboratory periods a week. Prerequisite, Agron. 10, or permission of instructor. A study of the chemical composition of soils; cation and anion exchange; acid, alkaline and saline soil conditions; and soil fixation of plant nutrients. Chemical methods of soil analysis will be studied with emphasis on their relation to fertilizer requirements. (Axley.)

*Agron. 117. Soil Physics. (3)*

First semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. Prerequisite, Agron. 10 and a course in physics, or permission of instructor. A study of physical properties of soils with special emphasis on relationship to soil productivity. (Strickling.)

*Agron. 119. Soil Mineralogy. (4)*

First semester, alternate years. (Offered 1961-62.) Two lectures and two laboratory periods a week. Prerequisite, permission of instructor. A study of the fundamental laws and forms of crystal symmetry and essentials of crystal structure; structure, occurrence, association and uses of minerals, determination of minerals by means of their morphological, chemical and physical properties. Particular attention is given to soil-forming minerals. Laboratory periods will be devoted to a systematic study of about 75 minerals. (Bourbeau.)

Additional courses under CROPS AND SOILS.

*For Graduates*

*Agron. 250. Advanced Soil Mineralogy. (3)*

First semester, alternate years. (Offered 1960-61.) Three lectures a week. Prerequisites, Agron. 10, Agron. 119 and permission of instructor. A study of the structure physical-chemical characteristics and identification methods of soil minerals, particularly clay minerals, and their relationship to soil genesis and productivity. (Bourbeau.)

*Agron. 251. Advanced Methods of Soil Investigation. (3)*

First semester, alternate years. (Offered 1961-62.) Three lectures a week. Prerequisites, Agron. 10 and permission of instructor. An advanced study of the theory of the chemical methods of soil investigation with emphasis on problems involving application of physical chemistry. (Axley.)

*Agron. 252. Advanced Soil Physics. (3)*

Second semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. Prerequisites, Agron. 10 and permission of instructor. An advanced study of physical properties of soils with special emphasis on relationship to soil productivity. (Strickling.)

*Agron. 253. Advanced Soil Chemistry. (3)*

First semester, alternate years. (Offered 1960-61.) One lecture and two laboratory periods a week. Prerequisite, permission of instructor. A continuation of Agron. 116 with emphasis on soil chemistry of minor elements necessary for plant growth. (Axley.)

Additional courses under CROPS AND SOILS.

## *Animal Husbandry*

### CROPS AND SOILS

#### *For Advanced Undergraduates*

##### *Agron. 198. Special Problems in Agronomy. (1)*

Second semester. Prerequisites, Agron. 10, 107, 108 or permission of instructor. A detailed study, including a written report of an important problem in agronomy. (Staff.)

##### *Agron. 199. Senior Seminar. (1)*

Second semester. Prerequisites, Agron. 107, and 108. Reports by seniors on current scientific and practical publications pertaining to agronomy. (Santelmann.)

#### *For Graduates*

##### *Agron. 260. Recent Advances in Agronomy. (2-4)*

First semester. Two hours each year. Total credit four hours. Prerequisite, permission of instructor. A study of recent advances in agronomy research. (Staff.)

##### *Agron. 302. Agronomy Seminar. (1, 1)*

First and second semesters. Total credit toward M. S., 2; toward Ph.D., 6. Prerequisite, permission of instructor. (Staff.)

##### *Agron. 399. Research.*

First and second semesters. Credit according to work done. (Staff.)

## ANIMAL HUSBANDRY

*Professors:* FOSTER AND GREEN.

*Associate Professor:* LEFFEL.

*Assistant Professors:* BURIC AND YOUNG.

##### *A. H. 1. Fundamentals of Animal Husbandry. (3)*

First semester. Two lectures and one laboratory period a week. A study of the general problems in breeding, feeding, management and marketing of beef cattle, sheep, swine and horses. Practice is given in the selection of animals to meet market demands. Field trips may be made to near-by farms and packing plants. (Staff.)

##### *A. H. 30. Types and Breeds of Livestock. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisite, A. H. 1. A study of the various types and breeds of livestock, their development, characteristics and adaptability. Practice is given in selection according to standards of excellence. (Staff.)

##### *A. H. 90. Livestock Judging. (2)*

Second semester. Two laboratory periods a week. Prerequisite, A. H. 30 or permission of instructor. Training is given in the judging of beef cattle, sheep, swine and horses. Occasional trips are made to farms where outstanding herds and flocks are maintained. (Buric.)

For Advanced Undergraduates

A. H. 100. *Advanced Livestock Judging.* (2)

First semester. Two laboratory periods a week. Prerequisites, A. H. 90 and permission of instructor. An advanced course in the selection and judging of purebred and commercial meat and work animals. The most adept students enrolled in this course are chosen to represent the University of Maryland in intercollegiate livestock judging contests. (Buric.)

A. H. 110. *Feeds and Feeding.* (3)

First semester. Two lectures and one laboratory period a week. Prerequisites, Chem. 1, 3. Elements of nutrition; source, characteristics, and adaptability of the various feeds to the several classes of livestock; feeding standards; the calculation and compounding of rations. (Leffel.)

A. H. 130. *Beef Cattle Production.* (3)

First semester. Two lectures and one laboratory period a week. Prerequisites, A. H. 1, A. H. 110. Principles and practices underlying the economical production of beef cattle, including a study of the breeds and their adaptability; selection, breeding, feeding, management and marketing of purebred and commercial herds. (Foster.)

A. H. 131. *Sheep Production.* (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, A. H. 1, A. H. 110. Principles and practices underlying the economical production of sheep, including a study of the breeds and their adaptability; selection, breeding, feeding, management and marketing of purebred and commercial flocks. (Leffel.)

A. H. 132. *Swine Production.* (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, A. H. 1, A. H. 110. Principles and practices underlying the economical production of swine, including a study of the breeds and their adaptability; selection, breeding, feeding, management and marketing of purebred and commercial herds. (Young.)

A. H. 134. *Light Horse Production.* (1)

First semester. One lecture a week. Prerequisite, A. H. 1. Study of the light horse breeds with emphasis on the types of usefulness of each. A discussion of principles of selection and breeding of light horses is included in this course. (Leffel.)

A. H. 135. *Light Horse Production.* (1)

Second semester. One lecture a week. Prerequisite, A. H. 1. Included is a study of the organization of the light horse farm, proper methods of feeding and training, control of disease, treatment and care of injuries, sale of surplus stock. (Leffel.)

A. H. 140. *Livestock Management.* (3)

Second semester, alternate years. (Offered 1960-61.) One lecture and two laboratory periods a week. Prerequisite, A. H. 110. A course designed to offer practical experience in working with livestock, especially to students who lack farm experience. Provides opportunities for students to learn practical methods of handling and managing beef cattle, sheep, and swine. Practice and training in fitting animals for shows and sales. (Buric.)

## *Animal Husbandry*

### *A. H. 160. Meat and Meat Products. (3)*

First semester. One lecture and two laboratory periods a week. Prerequisite, A. H. 1. Designed to give information on the processing and handling of the nation's meat supply. A study of the physical and structural qualities which effect the value of meat and meat products. Trips are made to packing houses and meat distributing centers. (Ferguson, Buric.)

### *A. H. 198. Special Problems in Animal Husbandry. (1-2) (4 cr. max.)*

First and second semesters. Work assigned in proportion to amount of credit. Prerequisite, approval of staff. A course designed for advanced undergraduates in which specific problems relating to animal husbandry will be assigned. (Staff.)

### *A. H. 199 A-B. Seminar. (1, 1)*

First and second semesters. Prerequisite, permission of instructor. Advanced undergraduates will be required to review literature, present reports and discuss assigned topics relating to animal husbandry. (Staff.)

## *For Advanced Undergraduates and Graduates*

### *A. H. 111. Animal Nutrition. (3)*

First semester. Three lectures a week. Prerequisites, Chem. 31, 32, 33, 34; A. H. 110. Graduate credit allowed, with permission of instructor. Processes of digestion, absorption, and metabolism of nutrients; nutritional balances; nature of nutritional requirements for growth, production and reproduction. (Leffel.)

### *A. H. 120. Principles of Breeding. (3)*

Second semester. Three lectures a week. Prerequisites, Zool. 104 and A. H. 130 or A. H. 131 or A. H. 132 or Dairy 101. Graduate credit (1-3 hours), allowed with permission of instructor. The practical aspects of animal breeding, heredity, variation, selection, development, systems of breeding, and pedigree study are considered. (Green.)

### *A. H. S130. Beef Cattle. (1)*

Summer session only. This course is designed primarily for teachers of vocational agriculture and Extension Service workers. Principles and practices underlying the economical production of beef cattle, including a study of the breeds and their adaptability; selection, breeding, feeding, management and marketing of purebred and commercial herds. (Foster.)

### *A. H. 150. Livestock Markets and Marketing. (2)*

First semester. Two lectures a week. Prerequisite, A. H. 1. Graduate credit allowed, with permission of instructor. History and development of livestock markets and systems of marketing; trends of livestock marketing; effect of changes in transportation and refrigeration facilities; the merchandising of meat products. (Young.)

## *For Graduates*

### *A. H. 205. Advanced Breeding. (2)*

Second semester, alternate years. (Offered 1959-60.) Two lectures a week. Prerequisites, A. H. 120 or equivalent and Biological Statistics. This course deals with the more technical phases of heredity and variation; selection indices; breeding systems; inheritance in farm animals. (Green.)



*A. H. 206. Advanced Livestock Management. (3)*

First semester, alternate years. (Offered 1960-61.) Two lectures and one laboratory period a week. Prerequisite, approval of staff. An intensive study of the newer developments in animal breeding, animal physiology, animal nutrition, endocrinology, and other closely allied fields as they apply to the management and commercial production of livestock. (Staff.)

*A. H. 207. Advanced Livestock Nutrition. (3)*

Second semester, alternate years. (Offered 1960-61.) Three lectures a week. Prerequisites, Chem. 31, 32, 33, 34 or equivalent and A. H. 111, or permission of instructors. Experimental techniques and recent developments in the feeding and nutrition of beef cattle, sheep and swine. (Leffel, Young.)

*A. H. 301. Special Problems in Animal Husbandry. (1-2) (4 cr. max.)*

First and second semesters. Work assigned in proportion to amount of credit. Prerequisite, approval of staff. Problems will be assigned which relate specifically to the character of work the student is pursuing. (Staff.)

*A. H. 302. Seminar. (1) (5 cr. max.)*

First and second semesters. Students are required to prepare papers based upon current scientific publications relating to animal husbandry or upon their research work, for presentation before and discussion by the class. (Staff.)

*A. H. 399. Research. (1-6)*

First and second semesters. Credit to be determined by amount and character of work done. With the approval of the Head of the Department, students will be required to pursue original research in some phase of animal husbandry, carrying the same to completion, and report the results in the form of a thesis. (Staff.)

## BOTANY

*Professors:* BAMFORD, GAUCH, COX, WEAVER, D. T. MORGAN AND KRAUSS.

*Associate Professors:* BROWN, O. D. MORGAN AND RAPPLEYE.

*Assistant Professors:* SISLER, WILSON, PATERSON AND GALLOWAY.

*Bot. 1. General Botany. (4)*

First and second semesters. Summer session. Two lectures and two laboratory periods a week. Laboratory fee, \$6.00. General introduction to botany, touching briefly on all phases of the subject. Emphasis is on the fundamental biological principles of the higher plants.

*Bot. 2. General Botany. (4)*

Second semester. Two lectures and two laboratory periods a week. Prerequisite, Bot. 1 or equivalent. Laboratory fee, \$6.00. A brief evolutionary study of algae, fungi, liverworts, mosses, ferns and their relatives, and the seed plants, emphasizing their structure, reproduction, habitats, and economic importance.



## Botany

### *Bot. 11. Plant Taxonomy. (3)*

Second semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 1, or equivalent. Laboratory fee, \$5.00. A study of the principles of plant classification, based on the collection and identification of local plants.

### *Bot. 20. Diseases of Plants. (3)*

First semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1, or equivalent. Laboratory fee, \$6.00. An introductory study of the symptoms and causal agents of plant diseases and measures for their control.

## *For Advanced Undergraduates*

### *Bot. 110. Plant Microtechnique. (3)*

Second semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 1. Laboratory fee, \$5.00. Principles and methods involved in the collection, preservation and preparation of plant materials for microscopic examination, including the preparation of temporary and permanent mounts, and photomicrography.

(Paterson.)

### *Bot. 199. Seminar. (1)*

First and second semesters. Two semester hours maximum credit. Prerequisite, permission of instructor. Discussion of special topics, current literature, problems and programs in all phases of botany. For seniors only, majors and minors in botany or biological science.

(Brown.)

## PLANT PHYSIOLOGY

## *For Advanced Undergraduates and Graduates*

### *Bot. 101. Plant Physiology. (4)*

First semester. Two lectures and two laboratory periods a week. Prerequisites, Bot. 1 and General Chemistry. Laboratory fee, \$6.00. A survey of the general physiological activities of plants.

(Krauss.)

### *Bot. 102. Plant Ecology. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 11, or equivalent. Laboratory fee, \$5.00. A study of plants in relation to their environments. Plant successions and formations of North America are treated briefly and local examples studied.

(Brown.)

## *For Graduates*

### *Bot. 200. Plant Biochemistry. (2)*

First semester. Prerequisites, Bot. 101 and elementary organic chemistry, or equivalent. A study of the important substances in the composition of the plant body and the chemical changes occurring therein.

(Galloway.)

### *Bot. 201. Plant Biochemistry Laboratory. (2)*

First semester. Two laboratory periods a week. Prerequisite, Bot. 200 or concurrent registration therein. Laboratory fee, \$10.00. Application of apparatus and techniques to the study of the chemistry of plant materials.

(Galloway.)

*Bot. 202. Plant Biophysics. (2)*

Second semester. (Not offered 1960-61.) Prerequisites, Bot. 101 and introductory physics, or equivalent. An advanced course dealing with the operation of physical phenomena in plant life processes. (Galloway.)

*Bot. 203. Biophysical Methods. (2)*

Second semester. (Not offered 1960-61.) Two laboratory periods a week. Laboratory course to accompany Bot. 202. Laboratory fee, \$10.00. (Galloway.)

*Bot. 204. Growth and Development. (2)*

First semester. (Not offered 1960-61.) Prerequisite, 12 semester hours of plant science. A study of current developments in the mathematical treatment of growth and the effects of radiation, plant hormones, photoperiodism, and internal biochemical balance during the development of the plant. (Krauss.)

*Bot. 205. Mineral Nutrition of Plants. (2)*

Second semester. Reports on current literature are presented and discussed in connection with recent advances in the mineral nutrition of plants. (Krauss.)

*Bot. 209. Physiology of Algae. (3)*

First semester. (Not offered 1960-61.) Two lectures and one laboratory period a week. Prerequisite, Bot. 201, the equivalent in allied fields, or permission of the instructor. Laboratory fee, \$10.00. A study of the physiology and comparative biochemistry of the algae. Laboratory techniques and recent advances in algal nutrition, photosynthesis, and growth will be reviewed. (Krauss.)

## PLANT MORPHOLOGY, CYTOLOGY AND TAXONOMY

*For Advanced Undergraduates and Graduates**Bot. 111. Plant Anatomy. (3)*

First semester. One lecture and two laboratory periods a week. Prerequisite, Bot. 110, or equivalent. Laboratory fee, \$5.00. The origin and development of the organs and tissue systems in the vascular plants. (Rappleye.)

*Bot. 113. Plant Geography. (2)*

First semester. Prerequisite, Bot. 1, or equivalent. A study of plant distribution throughout the world and the factors generally associated with such distribution. (Brown.)

*Bot. 115. Structure of Economic Plants. (3)*

Second semester. (Not offered 1960-61.) One lecture and two laboratory periods a week. Prerequisite, Bot. 111. Laboratory fee, \$5.00. A detailed microscopic study of the anatomy of the chief fruit and vegetable crops. (Rappleye.)

*Bot. 116. History and Philosophy of Botany. (1)*

Second semester. (Not offered 1960-61.) Prerequisites, Bot. 1 and permission of instructor. Discussion of the development and ideas and knowledge about plants, leading to a survey of contemporary work in botanical science. (Bamford.)

*Bot. 117. General Plant Genetics. (2)*

Second semester. Prerequisite, Bot. 1 or equivalent. The basic principles of plant

## Botany

genetics are presented; the mechanics of transmission of the hereditary factors in relation to the life cycle of seed plants, the genetics of specialized organs and tissues, spontaneous and induced mutations of basic and economic significance, gene action, genetic maps, the fundamentals of polyploidy, and genetics in relation to methods of plant breeding are the topics considered. (D. T. Morgan.)

### *Bot. 136. Plants and Mankind. (2)*

First semester. Prerequisite, Bot. 1 or equivalent. A survey of the plants which are utilized by man, the diversity of such utilization, and their historic and economic significance. (Rappleye.)

### *Bot. 151S. Teaching Methods in Botany. (2)*

Summer session. (Not offered 1960-61.) Five two-hour laboratory and demonstration periods per week. Prerequisite, Bot. 1, or equivalent. Laboratory fee, \$5.00. A study of the biological principles of common plants, and demonstrations, projects, and visual aids suitable for teaching in primary and secondary schools.

### *Bot. 153S. Field Botany. (2)*

Summer session. (Not offered 1960.) Prerequisite, Bot. 1 or General Biology. Five two-hour laboratory periods a week. Laboratory fee, \$5.00. Offered 1958 and in rotation with other courses thereafter. The identification of trees, shrubs, and herbs, emphasizing the native plants of Maryland. Manuals, keys, and other techniques will be used. Numerous short field trips will be taken. Each student will make an individual collection. (Brown.)

## For Graduates

### *Bot. 211. Cytology. (4)*

First semester. Two lectures and two laboratory periods a week. Prerequisite, introductory genetics. Laboratory fee, \$10.00. A detailed study of the chromosomes in mitosis and meiosis, and the relation of these to current theories of heredity and evolution. (Bamford, D. T. Morgan.)

### *Bot. 212. Plant Morphology. (3)*

Second semester. One lecture and two laboratory periods a week. Prerequisites, Bot. 11, Bot. 111, or equivalent. Laboratory fee, \$5.00. A comparative study of the morphology of the flowering plants, with special reference to the phylogeny and development of floral organs. (Rappleye.)

### *Bot. 215. Plant Cytogenetics. (3)*

First semester. (Not offered 1960-61.) Two lectures and one laboratory period a week. Prerequisite, introductory genetics. Laboratory fee, \$10.00. An advanced study of the current status of plant genetics, particularly gene mutations and their relation to chromosome changes in corn and other favorable genetic materials. (D. T. Morgan.)

## PLANT PATHOLOGY

### *For Advanced Undergraduates and Graduates*

### *Bot. 122. Research Methods in Plant Pathology. (2)*

First or second semester. Two laboratory periods a week. Prerequisite, Bot. 20, or

equivalent. Laboratory fee, \$5.00. Advanced training in the basic research techniques and methods of plant pathology. (Wilson.)

*Bot. 123. Diseases of Ornamental Plants. (2)*

Second semester. (Not offered 1960-61.) Prerequisite, Bot. 20, or equivalent. Symptoms, control measures, and other pertinent information concerning the diseases which affect important ornamental plants grown in the eastern states. (Wilson.)

*Bot. 124. Diseases of Tobacco and Agronomic Crops. (2)*

First semester. Prerequisite, Bot. 20, or equivalent. The symptoms and control of the diseases of tobacco, forage crops and cereal grains. (O. D. Morgan.)

*Bot. 125. Diseases of Fruit Crops. (2)*

First semester. (Not offered 1960-61.) Prerequisite, Bot. 20, or equivalent. Symptoms and control of the diseases affecting fruit production in the eastern United States. (Weaver.)

*Bot. 126. Diseases of Vegetable Crops. (2)*

Second semester. Prerequisite, Bot. 20, or equivalent. The recognition and control of diseases affecting the production of important vegetable crops grown in the eastern United States. (Cox.)

*Bot. 128. Mycology. (4)*

Second semester. Two lectures and two laboratory periods a week. Prerequisite, Bot. 2, or equivalent. Laboratory fee, \$6.00. An introductory study of the morphology, classification, life histories, and economics of the fungi. (Wilson.)

*Bot. 141. Nematode Disease of Plants. (2)*

First semester. Prerequisite, Bot. 20 or permission of instructor. Designed to acquaint students in agricultural sciences with the role of nematodes as plant pathogens; study of representative diseases caused by nematodes; principles and practice of control.

*Bot. 152S. Field Plant Pathology. (1)*

Summer session. Daily lecture for three weeks. Prerequisite, Bot. 20, or equivalent. Given in accordance with demand. Laboratory fee, \$5.00. (Not offered 1960.) A course for county agents and teachers of vocational agriculture. Discussion and demonstration of the important diseases in Maryland crops. (Cox, Staff.)

## For Graduates

*Bot. 221. Virus Diseases. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisites, Bot. 20 and Bot. 101. Laboratory fee, \$10.00. Consideration of the physical, chemical and physiological aspects of plant viruses and plant diseases. (Sisler.)

*Bot. 223. Physiology of Fungi. (2)*

First semester. Prerequisites, Organic Chemistry and Bot. 101 or the equivalent in bacterial or animal physiology. A study of various aspects of fungal metabolism, nutrition, biochemical transformations, fungal products, and mechanism of fungicidal action. (Sisler.)

## Dairy

### Bot. 224. *Physiology of Fungi Laboratory.* (1)

First semester. One laboratory period per week. Prerequisite, Bot. 223 or concurrent registration therein. Laboratory fee, \$10.00. Application of equipment and techniques in the study of fungal physiology. (Sisler.)

### Bot. 226. *Plant Disease Control.* (3)

First semester. (Not offered 1960-61.) Prerequisite, Bot. 20, or equivalent. An advanced course dealing with the theory and practices of plant disease control. (Cox.)

### Bot. 241. *Plant Nematology.* (3)

Second semester. (Not offered 1960-61.) Two lectures and one laboratory period a week. Prerequisite, permission of instructor. Laboratory fee, \$10.00. Detailed study of the nematodes parasitic on plants, their general morphology, taxonomy, reproduction, embryology, physiology, and ecology. Special emphasis will be given to recent advances in plant nematology.

### Bot. 301. *Special Problems in Botany.* (2 or 3)

First or second semester. Credit according to time scheduled and organization of course. Maximum credit toward an advanced degree for the individual student at the discretion of the Department. This course may be organized as a lecture series on a specialized advanced topic, or may consist partly, or entirely, of experimental procedures. It may be taught by visiting lecturers, or by resident staff members. Problems or topics may be in physiology, ecology, pathology, mycology, nematology, cytology, cytogenetics, morphology, anatomy, or taxonomy.

### Bot. 302. *Seminar in Botany.* (1)

First and second semesters. Prerequisite, permission of the instructor. Discussion of special topics and current literature in all phases of botany. (Staff.)

### Bot. 399. *Research.*

Credit according to work done. A minimum of 6 credit hours is required for the M.S. degree, and an additional minimum of 12 hours is required for the Ph.D. degree. Students must be qualified to pursue with profit the research to be undertaken. (Staff.)

## DAIRY

*Professors:* DAVIS AND ARBUCKLE.

*Associate Professors:* KEENEY AND MATTICK.

*Assistant Professors:* HEMKEN, KING, STEWART, VANDERSALL AND WILLIAMS.

*Instructor:* SEELEY.

### DAIRY HUSBANDRY

#### Dairy 1. *Fundamentals of Dairying.* (3)

Second semester. Two lectures and one laboratory period a week. Laboratory fee, \$3.00. This course is designed to cover the entire field of dairying. The content of the course deals with all phases of dairy cattle feeding, breeding and management and the manufacturing, processing, distribution and marketing of dairy products. (Davis, Mattick.)



*Dairy 20. Dairy Production. (3)*

First semester. Two lectures and one laboratory period per week. Prerequisite, Dairy 1. A comprehensive course in dairy breeds, selection of dairy cattle, dairy cattle nutrition, feeding and management. (Hemken.)

*Dairy 30. Dairy Cattle Judging. (2)*

Second semester. Two laboratory periods a week. This course offers complete instruction in the selection and comparative judging of dairy cattle. Trips to various dairy farms for judging practice will be made. (Hemken.)

*For Advanced Undergraduates and Graduates**Dairy 102. Physiology of Reproduction. (3)*

First semester. Two lectures and one laboratory per week. Anatomy, endocrine physiology, reproductive processes and artificial insemination of cattle. (Williams.)

*Dairy 103. Physiology of Milk Secretion. (3)*

Second semester. (Alternate years, given in 1961-62.) Two lectures and one laboratory period per week. Prerequisites, Zool. 1 and Organic Chemistry. The anatomy, evolution and metabolism of the mammary gland including hormonal control and the biosynthesis of milk constituents. (Williams.)

*Dairy 105. Dairy Cattle Breeding. (3)*

Second semester. (Offered 1960-61.) Two lectures and one laboratory period a week. Prerequisites, Dairy 1, Zool. 104. A specialized course in breeding dairy cattle. Emphasis is placed on methods of evaluation and selection, systems of breeding, and breeding programs. (Davis.)

*Dairy 198. Special Problems in Dairying. (1-4) (4 cr. max.)*

First and second semesters. Prerequisite, permission of Department. Credit in accordance with the amount and character of work done. Special problems will be assigned which relate specifically to the work the student is pursuing. (Staff.)

*Dairy 199. Dairy Seminar. (1)*

Second semester. Prerequisite, permission of Department. Presentation and discussion of current literature and research work in dairying. (Staff.)

## DAIRY TECHNOLOGY

*Dairy 40. Grading Dairy Products. (2)*

Second semester. Two laboratory periods a week. Laboratory fee, \$3.00. Market grades and the judging of milk, butter, cheese, and ice cream. (King.)

*For Advanced Undergraduates and Graduates**Dairy 108. Dairy Technology. (4)*

First semester. Two lectures and two laboratory periods a week. Prerequisites, Dairy 1, Microb. 133, Chem. 1, 3. Laboratory fee, \$3.00. Composition standards for milk and milk products, critical interpretation and application of practical factory methods of analyses for fat and solids; quality tests. (Keeney.)

## Dairy

### *Dairy 109. Market Milk. (4)*

Second semester. Two lectures and two laboratory periods a week. Prerequisites, Dairy 1, Microb. 133, Chem. 1, 3. Laboratory fee, \$3.00. Commercial aspects of the market milk industry relating to transportation, processing, and distribution; operation of a market milk plant; quality problems; chocolate milk, buttermilk and cottage cheese. (King.)

### *Dairy 110. Concentrated Milk, Cheese and Butter. (4)*

First semester. Two lectures and one five-hour laboratory a week. Prerequisites, Dairy 1, Microb. 133 or equivalent; Chem. 1, 3. Laboratory fee, \$3.00. Methods of production of butter, cheese, condensed and evaporated milk and milk products. Consideration is given to the procedures of processing, quality control and the physio-chemical principles involved. (Mattick.)

### *Dairy 112. Ice Cream Making. (4)*

First semester. Two lectures and two laboratory periods a week. Prerequisite, Dairy 108. Laboratory fee, \$3.00. The ice cream industry; commercial methods of manufacturing ice cream; fundamental principles; ingredients; quality control. (Arbuckle.)

### *Dairy 116. Dairy Plant Management. (3)*

Second semester. Two lecture periods and one three-hour laboratory period per week. Prerequisites, at least three advanced dairy products technology courses. Principles of dairy plant management record systems; personnel, plant design and construction; dairy machinery and equipment. (Mattick.)

## *For Graduates in Dairy Husbandry and Dairy Technology*

### *Dairy S101. Advanced Dairy Production. (1)*

Summer session only. An advanced course primarily designed for teachers of vocational agriculture and county agents. It includes a study of the newer discoveries in dairy cattle nutrition, breeding and management. (Staff.)

### *Dairy 201. Advanced Ruminant Nutrition. (3)*

First semester. (Alternate years, given in 1960-61.) Two one-hour lectures and one two-hour laboratory per week. Prerequisite, permission of Department. Biochemical, physiological and bacteriological aspects of the nutrition of ruminants and other animals. (Davis.)

### *Dairy 202. Dairy Research Methods. (3)*

First semester, alternate years. (Offered 1959-60.) Prerequisite, permission of Department. The application of physio-chemical and bio-chemical techniques to dairy research problems including chromatography, spectrophotometry, radio-active isotope tracer techniques and animal balance studies. (Stewart.)

### *Dairy 301. Special Problems in Dairying. (1-5) (4 cr. max., M.S.; 8 cr. max., Ph.D.)*

First and second semesters. Prerequisite, permission of professor in charge of work. Credit in accordance with the amount and character of work done. Methods of

conducting dairy research and the presentation of results are stressed. A research problem which relates specifically to the work the student is pursuing will be assigned. (Staff.)

*Dairy 302. Advanced Dairy Seminar. (1)*

First and second semesters. M.S. candidates can obtain 4 credits; Ph.D. candidates can obtain 6 credits. Assigned readings, presentation and discussion of timely topics and fundamental research in dairy science. (Staff.)

*Dairy 399. Research. (1-8)*

First and second semesters. Credit to be determined by the amount and quality of work done. Original investigation by the student of some subject assigned by the major professor, the completion of the assignment and the preparation of a thesis in accordance with requirements for an advanced degree. (Staff.)

## ENTOMOLOGY

*Professor:* BICKLEY.

*Associate Professor:* JONES.

*Assistant Professors:* ABRAMS, HARRISON, HAVILAND AND JOHNSON.

*Lecturers:* SAILER AND SHEPARD.

*Ent. 1. Introductory Entomology. (3)*

First and second semesters. Two lectures and one laboratory period a week. Prerequisite, one semester of college zoology. Laboratory fee, \$3.00. The position of insects in the animal kingdom, their gross structure, classification into orders and principal families and the general economic status of insects. A collection of common insects is required.

*Ent. 4. Beekeeping. (2)*

First semester. A study of the life history, behavior and seasonal activities of the honeybee, its place in pollination of flowers with emphasis on plants of economic importance and bee lore in literature.

*Ent. 20. Insect Pests of Agricultural Crops. (4)*

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisites, Zool. 1 and Bot. 1. Laboratory fee, \$3.00. The recognition, biology, and control of insects injurious to fruit and vegetable crops, field crops and stored products.

### *For Advanced Undergraduates and Graduates*

*Ent. 100. Advanced Apiculture. (3)*

Second semester. One lecture and two three-hour laboratory periods a week. Prerequisite, Ent. 4. Laboratory fee, \$3.00. The theory and practice of apiary management. Designed for the student who wishes to keep bees or requires a practical knowledge of bee management. (Abrams.)

*Ent. 105. Medical Entomology. (3)*

First semester. Two lectures and one two-hour laboratory period a week. Prerequisite, Ent. 1, or consent of the Department. Laboratory fee, \$3.00. A study of insects and related arthropods that affect the health and comfort of man directly and

## Entomology

as vectors of disease. In discussions of the control of such pests the emphasis will be upon community sanitation. (Jones.)

### *Ent. 107. Insecticides. (2)*

Second semester. Prerequisite, consent of the Department. The development and use of contact and stomach poisons, fumigants and other important chemicals, with reference to their chemistry, toxic action, compatibility, and host injury. Recent research emphasized. (Shepard.)

### *Ent. 109. Insect Physiology. (2)*

Second semester. Two lectures and occasional demonstrations. Prerequisite, consent of the Department. The functioning of the insect body with particular reference to blood, circulation, digestion, absorption, excretion, respiration, reflex action and the nervous system, and metabolism. (Jones.)

### *Ent. 115. Quarantine Procedures. (2)*

Second semester. Prerequisite, consent of the Department. Lectures on the principles and procedures involved in preventing the introduction of foreign pests and the limitation of spread of endemic or introduced pests. (Johnson.)

### *Ent. 116. Insect Pests of Ornamentals and Greenhouse Plants. (3)*

Second semester. Two lectures and one two-hour laboratory period a week. Prerequisites, Bot. 1 and Zool. 1. Laboratory fee, \$3.00. The recognition, biology, and control of insects injurious to plants grown in ornamental plantings, nurseries, and under glass. (Haviland.)

### *Ent. 119. Insect Pests of Domestic Animals. (2)*

First semester. One lecture and one two-hour laboratory period a week. Prerequisite, Ent. 1, or consent of the Department. Laboratory fee, \$3.00. The recognition, biology, and control of insects and related arthropods injurious to horses, cattle, hogs, sheep, goats, and poultry. (Haviland.)

### *Ent. 120. Insect Taxonomy and Biology. (4)*

First semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, Ent. 1. Laboratory fee, \$3.00. Introduction to the principles of systematic entomology and the study of all orders and the important families of insects; immature forms considered. (Bickley.)

### *Ent. S121. Entomology for Science Teachers. (4)*

Summer. Five lectures and five two-hour laboratory periods a week. Laboratory fee, \$3.00. This course will include the elements of morphology, taxonomy and biology of insects using examples commonly available to high school teachers. It will include practice in collecting, preserving, rearing and experimenting with insects insofar as time will permit. (Haviland.)

### *Ent. 198. Special Problems. (1-3)*

First and second semesters. Credit and prerequisites, to be determined by the Department. Investigations of assigned entomological problems. (Staff.)

### *Ent. 199. Seminar. (1, 1)*

First and second semesters. Prerequisite, senior standing. Presentation of original work, reviews and abstracts of literature. (Staff.)



### For Graduates

#### *Ent. 203. Advanced Insect Morphology. (3)*

Second semester. One lecture and two three-hour laboratory periods a week. Laboratory fee, \$3.00. Insect structure with special reference to function. Emphasis on internal anatomy. Given in preparation for advanced work in physiology or research in morphology. (Haviland.)

#### *Ent. 205. Insect Ecology. (2)*

First semester. One lecture and one two-hour laboratory period a week. Prerequisite, consent of the Department. Laboratory fee, \$3.00. A study of fundamental factors involved in the relationship of insects to their environment. Emphasis is placed on the insect as a dynamic organism adjusted to its surroundings. (Sailer.)

#### *Ent. 206. Culicidology. (2)*

Second semester, alternate years. (Not offered 1960-61.) One lecture and one three-hour laboratory period a week. Laboratory fee, \$3.00. The classification, distribution, ecology, biology, and control of mosquitoes. (Bickley.)

#### *Ent. 207. Advanced Insect Physiology. (4)*

Second semester. Two lectures and two three-hour laboratory periods a week. Laboratory fee, \$3.00. Prerequisites, one year of Organic Chemistry and Ent. 109 or equivalent. In this course students rear experimental insects, make up reagents and solutions to be used, set up equipment, calibrate it, and make detailed measurements and observations on the functions of selected organ systems. (Jones.)

#### *Ent. 301. Advanced Entomology. (1-6)*

Credit and prerequisites to be determined by the Department. First and second semesters. Studies of minor problems in morphology, taxonomy and applied entomology, with particular reference to the preparation of the student for individual research. (Staff.)

#### *Ent. 399. Research.*

First and second semesters. Required of graduate students majoring in entomology. This course involves research on an approved project. A dissertation suitable for publication must be submitted at the conclusion of the studies as a part of the requirement for an advanced degree. (Staff.)

## HORTICULTURE

*Professors:* HAUT, KRAMER, LINK, SCOTT, SHANKS, STARK AND THOMPSON.

*Associate Professors:* REYNOLDS, SHOEMAKER AND WILEY.

*Instructor:* TODD.

#### *Hort. 5, 6. Tree Fruit Production. (3, 2)*

First and second semesters. (Second semester offered in alternate years only, 1961-62.) One or two lectures and one laboratory period a week. Courses must be taken in sequence. Prerequisite, Bot. 1. A study of commercial varieties and principles and practices in fruit production, harvesting and storage. One field trip required.

#### *Hort. 11. Greenhouse Management. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A detailed study of greenhouse construction and management.



## *Horticulture*

### *Hort. 16. Garden Management. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. The various species of annuals, herbaceous perennials, bulbs, bedding plants, and roses and their cultural requirements.

### *Hort. 22. Landscape Gardening. (2)*

First semester. The theory and general principles of landscape gardening and their application to private and public areas.

### *Hort. 56. Elements of Landscape Design. (2)*

Second semester. Two laboratory periods per week. A course dealing with basic design in the use of trees, shrubs, evergreens, annual and perennial flowering plants on home properties.

### *Hort. 58. Vegetable Production. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A study of the principles and practices of commercial vegetable production.

### *Hort. 59. Berry Production. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A study of the principles and practices involved in the production of small fruits including grapes, strawberries, raspberries, blackberries, and cranberries.

### *Hort. 61. Introduction to Fruit and Vegetable Processing. (1)*

Second semester. Early history and development of the various types of preservation of horticultural crops, such as canning, freezing, dehydration, pickling or brining. The relative importance of these methods on state, national and world-wide bases are emphasized.

### *Hort. 62. Plant Propagation. (3)*

First semester. Two lectures and one laboratory period a week. Prerequisite, Bot. 1. A study of principles and practices of propagation of horticultural plants.

### *Hort. 63. Flower Store Management. (3)*

Second semester, alternate years. (Offered 1960-61.) Two lectures and one laboratory period a week. Prerequisite, Hort. 11. Laboratory fee, \$5.00. A study of the operation and management of a flower store. Laboratory period devoted to principles and practice of floral arrangements and decoration.

### *For. 30. Elements of Forestry. (3)*

Second semester. (Offered 1959-60.) Two lectures and one two-hour laboratory period per week. Prerequisite, Bot 1. Not open to freshmen. A general survey of the field of forestry, including timber values, conservation, protection, silviculture, utilization, mensuration, engineering, recreation and lumbering. Principles and practices of woodland management.

### For Advanced Undergraduates

#### Hort. 152. *Landscape Design*. (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, Hort. 22; prerequisite or concurrently, Hort. 107. A consideration of the principles of landscape design and supplemented by direct application in the drafting room.

(Shoemaker.)

#### Hort. 153. *Landscape Design*. (3)

Second semester. Three laboratory periods a week. Prerequisite, Hort. 152. Advanced landscape design.

(Shoemaker.)

#### Hort. 199. *Seminar*. (1)

First semester. Oral presentation of the results of investigational work by reviewing recent scientific literature in the various phases of horticulture.

(Staff.)

### For Advanced Undergraduates and Graduates

#### Hort. 101. *Technology of Fruits*. (3)

First semester. (Offered 1960-61.) Prerequisites, Hort. 6, Bot. 101. A critical analysis of research work and application of the principles of plant physiology, chemistry, and botany to practical problems in commercial production.

(Thompson.)

#### Hort. 103. *Technology of Vegetables*. (3)

Second semester. (Offered 1961-62.) Prerequisites, Hort. 58, Bot. 101. For a description of these courses see the general statement under Hort. 101.

(Stark.)

#### Hort. 105. *Technology of Ornamentals*. (2)

First semester. Prerequisite, Bot. 101. A study of the physiological plant processes as related to the growth, flowering, and storage of floriculture and ornamental plants.

(Link.)

#### Hort. 107, 108. *Woody Plant Materials*. (3,3)

First and second semesters. Prerequisite, Bot. 11. A field and laboratory study of trees, shrubs, and vines used in ornamental plantings.

#### Hort. 114. *Systematic Horticulture*. (3)

First semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. A study of the origin, taxonomic relationship and horticultural classification of fruits and vegetables.

#### Hort. S115. *Truck Crop Management*. (1)

Summer session only. Primarily designed for teachers and vocational agriculture and extension agents. Special emphasis will be placed upon new and improved methods of production of the leading truck crops. Current problems and their solution will receive special attention.

#### Hort. 123. *Quality Control*. (3)

First semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. Principles involved in the evaluation of factors of quality in horticultural products including appearance, kinesthetic flavor and sanitation factors and statistical presentation of results.

(Kramer.)

## Horticulture

### *Hort. 124. Quality Control Systems. (3)*

Second semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. Prerequisite, Hort. 123. Development of quality control systems designed to maintain specific levels of quality for selected food products. (Kramer.)

### *Hort. S124. Tree and Small Fruit Management. (1)*

Summer session only. Primarily designed for vocational agriculture teachers and county agents. Special emphasis will be placed upon new improved commercial methods of production of the leading tree and small fruit crops. Current problems and their solution will receive special attention.

### *Hort. S125. Ornamental Horticulture. (1)*

Summer session only. A course designed for teachers of agriculture, home demonstration agents and county agents. Special emphasis will be given to the development of lawns, flowers and shrubbery to beautify homes.

### *Hort. 150, 151. Commercial Floriculture. (3, 3)*

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, Hort. 11. Growing and handling bench crops and potted plants, and the marketing of cut flowers. (Link.)

### *Hort. 155, 156. Fundamentals of Fruit and Vegetable Processing. (3, 3)*

First and second semesters, alternate years. (Offered 1960-61.) Two lectures and one laboratory period a week. Prerequisites, Chem. 32, 34, Hort. 61. Laboratory fee, \$5.00 per semester. The fundamentals of canning, freezing and preserving of horticultural crops with emphasis on the chemical, biochemical and microbiological aspects of processing. (Wiley.)

### *Hort. 159. Nursery Management. (3)*

Second semester, alternate years. (Offered 1961-62.) Two lectures and one laboratory period a week. Prerequisites or concurrently, Hort. 62, 107, 108. A study of all phases of commercial nursery management and operations.

### *Hort. 160. Arboriculture. (3)*

Second semester, alternate years. (Offered 1960-61.) Two lectures and one laboratory period a week. Prerequisites or concurrently, Hort. 107 and 108. A study of the planting and maintenance of ornamental shrubs and trees, including basic principles of park, institution and estate maintenance.

### *Hort. 161. Physiology of Maturation and Storage of Horticultural Crops. (2)*

Second semester, alternate years. (Offered 1960-61.) Two lectures a week. Prerequisite, Bot. 101. Factors related to maturation and application of scientific principles to handling and storage of horticultural crops. (Scott.)

### *Hort. 198. Special Problems. (2, 2) (4 cr. max.)*

First and second semesters. Credit arranged according to work done. For major students in horticulture or botany. Four credits maximum per student. (Staff.)

## For Graduates

### *Hort. 200. Experimental Procedures in Plant Sciences. (3)*

First semester. Prerequisite, permission of instructor. Organization of research projects

and presentation of experimental results in the field of biological science. Topics included will be: Sources of research financing, project outline preparation, formal progress reports, public and industrial supported research programs, and technical and popular presentation of research data. (Haut.)

*Hort. 201, 202. Experimental Pomology. (3, 3)*

First and second semesters. Prerequisite, Bot. 101. A systematic review of scientific knowledge and practical observations as applied to commercial practices in pomology. (Thompson.)

*Hort. 203, 204, 205. Experimental Olericulture. (2, 2, 2)*

First semester and in sequence. Prerequisite, Bot. 101, a systematic review of scientific knowledge and practical observations as applied to commercial practices in olericulture. (Stark.)

*Hort. 206. Experimental Floriculture. (3)*

First semester. Prerequisite, Bot. 101. A systematic review of scientific knowledge and practical observations as applied to commercial practices in floriculture. (Link.)

*Hort. 207. Methods of Horticultural Research. (3)*

Second semester. One lecture and one four-hour laboratory period a week. A critical study of research methods which are or may be used in horticulture. (Scott.)

*Hort. 210. Experimental Processing. (2)*

Second semester. Prerequisite, permission of instructor. A systematic review of scientific knowledge and practical observations as applied to commercial practices in processing. (Kramer.)

*Hort. 302. Advanced Seminar. (1, 1)*

First and second semester. Oral reports with illustrative material are required on special topics or recent research publications in horticulture. Three credit hours maximum allowed toward the M.S. degree or six credits maximum toward the Ph.D. degree. (Haut, Staff.)

*Hort. 399. Advanced Horticultural Research. (2-12)*

First and second semesters. Credit granted according to work done. (Staff.)

## POULTRY HUSBANDRY

*Professors:* SHAFFNER AND COMBS.

*Associate Professor:* QUIGLEY.

*Assistant Professors:* CREEK, HELBACKA AND WILCOX.

*P. H. 1. Poultry Production. (3)*

First semester. Two lectures and one laboratory period a week. This is a general comprehensive course covering all phases of modern poultry husbandry practices, including breeds, incubation, brooding, housing, feeding, culling, marketing, caponizing, and the economics of production and distribution of poultry products. (Quigley.)

*P. H. 3. Physiology of Hatchability. (3)*

Second semester, alternate years. (Not offered 1959-60.) Two lectures and one laboratory period a week. The physiology of embryonic development as related to



## *Poultry Husbandry*

principles of hatchability and problems of incubation encountered in the hatchery industry are discussed. Laboratory exercises stressing fundamentals of hatchability are assigned. (Shaffner.)

### *P. H. 59. Advanced Poultry Judging. (1)*

First semester. Prerequisite, P. H. 1. One lecture or laboratory period per week. The theory and practice judging and culling by physical means is emphasized, including correlation studies of characteristics associated with productivity. Contestants for regional collegiate judging competitions will be selected from this class. (Quigley.)

## *For Advanced Undergraduates*

### *P. H. 101. Poultry Nutrition. (3)*

First semester, alternate years. (Not offered 1960-61.) Two lectures and one laboratory period a week. Nutritive requirements of poultry and the ingredients used to meet these requirements are presented. Studies are made of various nutritional diseases commonly encountered under practical conditions. (Combs.)

### *P. H. 103. Commercial Poultry Management. (2)*

Second semester, alternate years. (Not offered in 1960-61.) Prerequisite, ten hours of poultry husbandry, including P. H. 1. A symposium on finance, investment, plant layout, specialization, purchase of supplies, and management problems in baby chick, egg, broiler, and turkey production; foremanship, advertising, selling, by-products, production and financial records. Field trips required. (Quigley.)

## *For Advanced Undergraduates and Graduates*

### *P. H. 104. Technology of Market Eggs and Poultry. (3)*

First semester, alternate years. (Not offered 1959-60.) Two lectures and one laboratory period per week. A study of the technological factors concerned with the processing, storage, and marketing of eggs and poultry, and of the factors affecting their quality and grading. (Helbacka.)

### *P. H. 105. Poultry Genetics. (3)*

Second semester, alternate years. (Offered 1960-61.) Prerequisites, P. H. 1 and Zool. 104. Two lectures and one laboratory period per week. Inheritance of factors related to egg and meat production and quality are stressed. An experiment utilizing procedures of pedigreed matings will be performed in the laboratory. (Wilcox.)

### *P. H. 109. Avian Physiology. (3)*

First semester. Two lectures and one laboratory period per week. Prerequisites, Zool. 1 and V. S. 108. (V. S. 108 may be taken simultaneously with P. H. 109.) The basic physiology of the bird is discussed, excluding the reproductive system. Special emphasis is given to physiological differences between birds and other vertebrates. (Wilcox.)

### *A. E. 117. Economics of Marketing Eggs and Poultry. (3)*

Second semester. Three lectures per week. (See Agricultural Economics, A. E. 117.)



*Poultry Hygiene, see Veterinary Science, V. S. 107.*

*Avian Anatomy, see Veterinary Science, V. S. 108.*

*P. H. S111. Poultry Breeding and Feeding. (1)*

Summer session only. This course is designed primarily for teachers of vocational agriculture and extension service workers. The first half will be devoted to problems concerning breeding and the development of breeding stock. The second half will be devoted to nutrition. (Combs, Wilcox.)

*P. H. S112. Poultry Products and Marketing. (1)*

Summer session only. This course is designed primarily for teachers of vocational agriculture and county agents. It deals with the factors affecting the quality of poultry products and with hatchery management problems, egg and poultry grading, preservation problems and market outlets for Maryland poultry. (Helbacka.)

*P. H. 198. Special Poultry Problems. (1-2) (3 cr. max.)*

First and second semesters. For senior poultry students. The student will be assigned special problems in the field of poultry for individual study and report. The poultry staff should be consulted before any student registers for this course. (Staff.)

### For Graduates

*P. H. 202. Advanced Poultry Nutrition. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisites, P. H. 101, Chem. 31, 32, 33 and 34, or equivalent, or permission of instructor. A fundamental study of the dietary role of proteins, minerals, vitamins, antibiotics, and carbohydrates is given as well as a study of the digestion and metabolism of these substances. Deficiency diseases as produced by the use of synthetic diets are considered. (Combs.)

*P. H. 203. Physiology of Reproduction of Poultry. (3)*

First semester. Two lectures and one laboratory period a week. Prerequisite, P. H. 102 or its equivalent. The role of the endocrines in avian reproduction, is considered. Fertility, sexual maturity, broodiness, egg formation, ovulation, and the physiology of oviposition are studied. Comparative mammalian functions are discussed. (Shaffner.)

*P. H. 205. Poultry Literature. (1-4)*

First and second semesters. Readings on individual topics are assigned. Written reports required. Methods of analysis and presentation of scientific material are discussed. (Staff.)

*P. H. 207. Poultry Nutrition Laboratory. (2)*

First semester, alternate years. (Not offered 1959-60.) One lecture and one laboratory period a week. To acquaint graduate students with common basic nutrition research techniques useful in conducting experiments with poultry. Actual feeding trials with chicks, as well as bacteriological and chemical assays will be performed. (Combs, Creek.)

*P. H. 302. Poultry Seminar. (1) (2 cr. max.)*

First and second semesters. Oral reports of current researches by staff members, graduate students, and guest speakers are presented. (Staff.)

*P. H. 399. Poultry Research. (1-6)*

First and second semesters. Credit in accordance with work done. Practical and fundamental research with poultry may be conducted under the supervision of staff members toward the requirements for the degrees of M. S. and Ph.D. (Staff.)

## VETERINARY SCIENCE

*Professors:* BRUECKNER, POELMA, DE VOLT, HANSEN AND REAGAN.

*Associate Professor:* BYRNE.

### *For Advanced Undergraduates and Graduates*

*V. S. 101. Comparative Anatomy. (3)*

First semester. Two lectures and one laboratory period a week. Normal structure of the domesticated animals; normal physiological activities; interrelationship of structure and function.

*V. S. 102. Animal Hygiene. (3)*

Second semester. Two lectures and one laboratory period a week. Nature of disease; immunity; prevention and control; common diseases of farm animals.

*V. S. 107. Poultry Hygiene. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisites, Microb. 1, P. H. 1. Virus, bacterial, and protozoon diseases; parasitic diseases; prevention, control, and eradication. (De Volt.)

*V. S. 108. Avian Anatomy. (3)*

First semester. Two lectures and one laboratory a week. Prerequisite, Zool. 1. Gross and microscopic structure, dissection and demonstration. (De Volt.)

### *For Graduates*

*V. S. 203. Electron Microscopy. (2)*

First and second semesters. One lecture and one laboratory period a week. Theory of the electron microscope, preparation of specimens, manipulations, photography. (Reagan, Byrne.)

*V. S. 399. Animal Disease Research. (2-6)*

First and second semesters. Credit in accordance with work done. Prerequisite, veterinary degree or consent of staff. Studies of practical disease phases. (Poelma, DeVolt, Hansen, Byrne, Brueckner.)

## THE AGRICULTURAL EXPERIMENT STATION

IRVIN C. HAUT, Ph.D., *Director*

The Agricultural Experiment Station serves Maryland agriculture in much the same manner as research laboratories serve large corporations. Maryland agriculture is made up of over thirty thousand small individual businesses, and there

is not sufficient capital, or sufficient income so that each one of these can conduct research. Yet the problems which face a biological undertaking such as farming, are as numerous and perplexing as the problems of any business. Certainly our production of food would be much more costly if it were not for the research results that have been obtained by the Agricultural Experiment Station.

The station is a joint federal and state undertaking. Passage of the Hatch Act in 1887, which made available a grant in aid to each state for the purpose of establishing an agricultural experiment station, gave a great impetus to the development of research work in agriculture. This work was further encouraged by the passage of the Adams Act in 1906, the Purnell Act in 1925, the Bankhead-Jones Act in 1935, and the Flannagan-Hope Act of 1946.

The work of the Maryland Agricultural Experiment Station which is supported by these Acts and by state appropriations centers at College Park. On the University campus are to be found laboratories for studying insects and diseases, soil fertility problems, botanical problems, and others. This is also the location of the livestock and dairy barns with their experimental herds. About eight miles from the campus at College Park, near Beltsville, the Plant Research Farm of about 500 acres is devoted to work connected with soil fertility, plant breeding and general crop production problems. An experimental farm near Upper Marlboro is devoted to the problems of tobacco growing and curing. A farm near Salisbury is devoted to solution of the problems of producers of broilers and of vegetable crops in the southern Eastern Shore area. Two experimental farms are operated near Ellicott City; one is devoted to livestock problems and the other to dairy cattle nutrition and forage research. Also tests of various crop and soil responses are distributed throughout the state. These different locations provide the opportunity to conduct experiments under conditions existing where the results will be put into practice. The solution of many difficult problems in the past has given the Station an excellent standing with farmers of the state.

## AGRICULTURAL EXTENSION SERVICE

PAUL E. NYSTROM, *Director*

Cooperative Extension work in agriculture and home economics, established by state and federal laws in 1914, extends practical agricultural and home information beyond the classrooms of the University of Maryland to young people, farmers, homemakers, and people in businesses relating to agriculture and home economics.

It is conducted under a Memorandum of Understanding between the Extension Service of the University of Maryland and the United States Department of Agriculture. The Extension Service is the educational arm in Maryland of the United States Department of Agriculture.

The work of the Extension Service is cooperatively financed by the federal, state and county governments. In each county there is a County Agricultural

## *Agricultural Extension Service*

Agent and a County Home Demonstration Agent. In counties where funds permit, and work requires, there are associates and assistants. Backed by a staff of specialists at the University, these agents are in close contact with local people and their problems.

Practically every phase of agriculture and home life comes within the scope of Extension work. The Extension Service teaches largely by demonstrations and carries the scientific and economic results of the Experiment Station and the U. S. Department of Agriculture to people in ways that they understand and use.

In Maryland, the Extension Service works in close association with all rural groups and organizations. In addition to work on the farms and in the farm homes, the Extension program is aimed at the many rural and urban people who service the agricultural industries of the state, including consumers.

In addition to work with adults, thousands of boys and girls are developed as leaders and given practical education in 4-H Clubs. Through their diversified activities, the boys and girls are given a valuable type of instruction and training, and are afforded an opportunity to develop self-confidence, perseverance, citizenship and leadership.

The Extension Service in cooperation with the College of Agriculture and the Experiment Station arranges and conducts short courses in various lines, many of which are held at the University. Some of these courses have been held regularly over a period of years and others are added as the need and demand develop.

### RURAL WOMEN'S SHORT COURSE

The Rural Women's Short Course has provided special educational opportunities for Maryland women since 1923. The attendance has grown steadily to more than 1,000 women from all counties and Baltimore City. The short course program lasts for one week and is held on the University campus.

### BOYS' AND GIRLS' CLUB WEEK

Members and leaders of boys' and girls' 4-H Clubs come to the University for a week each year, usually in August. Class work and demonstrations are given by specialists and a broad program of education, inspiration and recreation is provided.

### CANNERS' SHORT COURSE

For many years a short course has been held each year to aid canners in keeping abreast of the latest developments in their industry. It is usually held in February.



## OTHER SHORT COURSES

Courses for nurserymen, florists, poultry flock selection agents, poultry products marketing, beekeepers, greenkeepers, sanitarians, conservation, cow testers, and feed manufacturers and distributors are among those held in recent years. Announcement of such courses is made to those who may be interested.

## SERVICE AND CONTROL PROGRAMS

The state law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture. Numerous services are performed by technically trained personnel which result in the improvement and maintenance of high standards in the production, processing and distribution of farm products.

In addition the improvement of many control or regulatory activities are authorized by the state law and are carried out by the following agencies responsible to the State Board of Agriculture.

### DAIRY INSPECTION SERVICE

The Maryland Dairy Inspection Law became effective June 1, 1935. However, the present activities of the Dairy Inspection Service are based on Article 43 of the Annotated Code of Maryland, Section 542 through Section 558, of the Laws of Maryland, 1951. The Dairy Department is charged with the administration of the law.

The purposes of the Dairy Inspection Law are as follows: (a) To insure producers who sell milk and cream by measure, weight and butterfat test, that samples, weights and tests used as the basis of payment for such products are correct; (b) To insure dealers who purchase milk and cream that their agents shall correctly weigh, sample, and test these products; (c) To insure correctness of tests made for official inspections or for public record. To achieve these purposes the law requires the licensing of all dealers who purchase milk and cream from producers, whether the purchases are by measure, weight, or test, and the licensing of all persons sampling, weighing and testing milk and cream when the results of such samples, weights, and tests are to serve as a basis of payment to producers.

Duties of the Dairy Inspection Service, resulting from enforcement of the Inspection Law, deal with the calibration of that glassware used in testing milk and cream and the rejection of inaccurate items; examination of all weighers, samplers, and testers and the issuance of licenses to those satisfactorily passing the examination; and inspection of the pertinent activities of weighers, samplers, testers and dairy plants.

### DEPARTMENT OF MARKETS

All of the activities of the Department of Markets are geared to the importance in modern agriculture of the problems of marketing farm products. The



## *Service and Control Programs*

Department endeavors to serve the every-day needs of the farmer in marketing his products and to insure a fair and equitable treatment of the farmer in all dealings which he may have concerning the marketing of his products. In the performance of these responsibilities, the Department carries out programs in extension marketing, conducts market surveys, compiles and disseminates marketing information and market data, operates a market news service, provides an agricultural inspection and grading service, maintains a consumer information service and enforces and interprets the agricultural marketing laws of the state. The regulatory aspects of the Department's functions are carried out as the agent of the State Board of Agriculture under the authority of various state laws relating to the marketing of farm products. A close working relationship is maintained with other specialists in the Extension Service, all departments of the Agricultural Marketing Service, the Maryland Crop Reporting Service, and the Agricultural Marketing Service of the United States Department of Agriculture. The voluntary and dynamic cooperation of the personnel in these various activities brings to bear on agricultural marketing problems an effective combination of research, education, and service.

The passage of the Federal Agricultural Research and Marketing Act gave additional impetus to the study and solution of agriculture's marketing problems. The Department of Markets is largely responsible for developing the state program under Title II of this act.

Information and assistance in all phases of marketing is available to all interested persons. When a sufficient number of individuals are interested, marketing specialists hold meetings and demonstrations in local communities. Field offices are located in Baltimore, Salisbury, Hancock and Pocomoke. Department headquarters is at the University of Maryland, College Park, Maryland.

### MARYLAND LIVE STOCK SANITARY SERVICE

The Live Stock Sanitary Service is organized under the State Board of Agriculture and is charged with the responsibility of preventing the introduction of diseases of animals and poultry from outside of the state and with control and eradication of such diseases within the state. The service is further charged with the responsibility of cooperating with the State Department of Health in the suppression of diseases of animals and poultry which affect the public health.

Control projects in bovine tuberculosis, Johne's disease, and bovine brucellosis are conducted in cooperation with the Agricultural Research Service of the United States Department of Agriculture. The field force of state employed veterinarians is augmented by a number of federal veterinarians in the conduct of these control programs. The control of swine brucellosis, pullorum disease in poultry, rabies, and many other disease conditions is conducted by the state without outside assistance.

Facilities for the diagnosis of a wide variety of diseases are furnished in

the main laboratory at College Park and in the branch laboratories at Salisbury, Centreville, Bel Air, Frederick, Hagerstown and Oakland.

#### SEED INSPECTION SERVICE

The Seed Inspection Service administers the state seed law; inspects seeds sold throughout the state; collects seed samples for laboratory examination; reports the results of the examinations to the parties concerned; publishes summaries of these reports which show the relative reliability of the label information supplied by wholesale seedsmen; cleans and treats tobacco seed intended for planting in the state; makes analyses tests, and examinations of seed samples submitted to the laboratory; and advises seed users regarding the economic and intelligent use of seeds. The Service also cooperates with the Agricultural Marketing Service of the United States Department of Agriculture in the enforcement of the Federal Seed Act in Maryland.

The work of the Seed Inspection Service is not restricted to the enforcement of the seed law however, for state citizens may submit seed samples to the laboratory for analysis, test, or examination. Specific information regarding suitability for planting purposes of lots of seeds is thus made available to individuals without charge. The growth of this service has been steady since the establishment of the laboratory in 1912. Most Maryland citizens, city and country, are directly interested in seeds for planting in flower-beds, lawns, gardens, or fields.

#### STATE HORTICULTURAL DEPARTMENT

In 1896 the subject of nursery inspection was given consideration under Article 48, of the Code of Public General Laws, under the title "Inspection" as designated by Chapter 290 of the "Acts of the General Assembly of Maryland of 1896." In 1898 certain sections of Article 48 were repealed and re-enacted with amendments, under a new sub-title, "State Horticultural Department," and eight new sections were added thereto. In 1916 the sections were again re-enacted with such changes in the wording as were necessary to bring them into conformity with the reorganization of the Maryland State College of Agriculture and Experiment Station and its Board of Trustees. Subsequently all regulatory functions including newly enacted Articles in regard to bee diseases, mosquitoes, and aerial spraying, were transferred to the State Board of Agriculture under Chapter 391 of the "Acts of the General Assembly."

Work in this field is designed to control insects and plant diseases and to protect the public in the purchase of products of nurserymen and florists. A considerable part of the time of the staff is occupied by inspection of orchards, crops, nurseries, greenhouses, and floral establishments. Cooperation with the federal government in the inspection and certification of materials that come under quarantine regulations is another major function of the Department. The Department enforces the provisions of the Apiary Law, including inspection of apiaries. This service includes control and eradication of diseases of strawberries and other small

## *Service and Control Programs*

fruits, diseases of apples, peaches, etc., inspection and certification of potatoes and sweet potatoes for seed, control of white pine blister rust, Dutch elm disease, etc.

### STATE DEPARTMENT OF DRAINAGE

The State Department of Drainage was established in 1937. Its duties are to promote and encourage the drainage of agricultural lands in the state, to correlate the activities of the local drainage organizations in the state and to cooperate with state and federal agencies in the interest of a permanent program of improved drainage.

### STATE INSPECTION SERVICE

#### *Feeds, Fertilizers, Agricultural Liming Materials and Pesticides*

The protection of consumers and ethical manufacturers of agricultural products against fraudulent practices, makes certain specialized statutes necessary. These laws are classified as correct labeling acts, and are enforced by the State Inspection Service. Included in this legislation are the State Feed, Fertilizer, Agricultural Liming Materials, and Pesticide laws.

Work of enforcing these laws is divided into five distinct phases: First, the commodities concerned must be registered under acceptable brand names, and with proper labels; second, official samples must be collected by the Department's inspectors from all parts of the state; third, chemical and physical examinations must be made to establish that professed standards of quality are being met; fourth, results must be assembled and published in concise and understandable form, with the reports made available to all interested persons; and fifth, the prosecution of those responsible for flagrant violations.

Hundreds of tests also are made annually on feed, fertilizer, and lime samples submitted by state purchasers. No charge is made for this service.

Throughout its existence, this Department has cooperated with comparable federal agencies in every possible way. In this activity it has attained not only state-wide, but also a nationally-recognized reputation for accuracy, timeliness, and unbiased fair treatment of the consumer and manufacturer alike.

The facilities of the Department are at all times available to supply the manufacturer with technical advice, and to safeguard him from unfair competition.

For its entire program of service and protection, the Department relies in large measure upon education, from the standpoint of both buyer and seller. However, in those rare instances when this policy is unheeded, backing by the courts, both federal and state, can be depended upon for enforcement assistance.

## FACULTY

1960-1961

### COLLEGE OF AGRICULTURE

#### *Administrative Officers*

GORDON M. CAIRNS, *Dean of Agriculture and Professor of Dairy Husbandry*  
B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

PAUL R. POFFENBERGER, *Assistant Dean-Instruction, and Professor of Agricultural Economics*

B.S., University of Maryland, 1935; M.S., 1937; PH.D., American University, 1953.

IRVIN C. HAUT, *Director of Experiment Station and Professor and Head of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D., University of Maryland, 1933.

PAUL E. NYSTROM, *Director of Extension and Professor of Agricultural Economics*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.

#### *Professors*

WENDELL S. ARBUCKLE, *Professor of Dairy Manufacturing*

B.S., Purdue University, 1933; A.M., University of Missouri, 1937; PH.D., 1940.

RONALD BAMFORD, *Professor and Head of Botany*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GEORGE M. BEAL, *Professor of Agricultural Economics*

B.S., Utah State College, 1934; M.S., University of Wisconsin, 1938; PH.D., 1942.

WILLIAM E. BICKLEY, *Professor and Head of Entomology*

B.S., University of Tennessee, 1934; M.S., 1936; PH.D., University of Maryland, 1940.

ARTHUR L. BRUECKNER, *Professor and Head of Veterinary Science*

B.S., University of Kentucky, 1914; V.M.D., University of Pennsylvania, 1924.

FRED L. BULL, *Extension Professor, Soil Conservation*

B.S., University of Maryland, 1925.

GEORGE J. BURKHARDT, *Professor of Agricultural Engineering*

B.S., University of Wisconsin, 1933; B.S.M.E., 1934; M.S., 1935.



## Faculty

- GERALD F. COMBS, *Professor of Poultry Husbandry*  
B.S., University of Illinois, 1940; PH.D., Cornell University, 1948.
- CARROLL E. COX, *Professor of Plant Pathology*  
A.B., University of Delaware, 1938; M.S., Virginia Polytechnic Institute, 1940; PH.D., University of Maryland, 1943.
- RICHARD E. DAVIS, *Professor and Head of Dairy*  
B.S., University of New Hampshire, 1950; M.S., Cornell University, 1952; PH.D., 1953.
- HAROLD M. DEVOLT, *Professor of Poultry Pathology*  
M.S., Cornell University, 1926; D.V.M., 1923.
- LEWIS P. DITMAN, *Research Professor of Entomology*  
B.S., University of Maryland, 1926; M.S., 1929; PH.D., 1931.
- DOROTHY EMERSON, *Extension Professor, Associate State 4-H Club Agent*
- JOHN E. FOSTER, *Professor and Head of Animal Husbandry*  
B.S., North Carolina State College, 1926; M.S., Kansas State College, 1927; PH.D., Cornell University, 1937.
- HUGH G. GAUCH, *Professor of Plant Physiology*  
B.S., Miami University, 1935; M.S., Kansas State College, 1937; PH.D., University of Chicago, 1939.
- ROBERT L. GREEN, *Professor and Head of Agricultural Engineering*  
B.S.A.E., University of Georgia, 1934; M.S., Iowa State College, 1939; PH.D., Michigan State University, 1953. Registered Professional Engineer.
- WILLARD W. GREEN, *Professor of Animal Husbandry*  
B.S., University of Minnesota, 1933; M.S., 1934; PH.D., 1939.
- POUL A. HANSEN, *Professor of Veterinary Bacteriology*  
B. OF PH., Copenhagen University, 1922; M.S., Royal Technical College, Copenhagen, 1926; PH.D., Cornell University, 1931.
- RUSSELL C. HAWES, *Professor of Marketing*  
B.S., Rhode Island State College, 1921; M.S., University of Rhode Island, 1942.
- MARY JUHN, *Research Professor, Poultry Physiology*  
B.S., Zurich, 1916; PH.D., University of Zurich, 1923.
- ALBERT V. KREWATCH, *Extension Professor of Agricultural Engineering*  
B.S., University of Delaware, 1925; M.S., 1929; E.E., 1933.
- AMIHUD KRAMER, *Professor of Horticulture*  
B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1942.
- ROBERT W. KRAUSS, *Professor of Plant Physiology*  
A.B., Oberlin College, 1947; M.S., University of Hawaii, 1949; PH.D., University of Maryland, 1951.



- ALBIN O. KUHN, *Professor of Agronomy and Executive Vice-President*  
B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.
- GEORGE S. LANGFORD, *Professor of Entomology and State Entomologist*  
B.S., Clemson College, 1921; M.S., University of Maryland, 1924; PH.D., Ohio State University, 1929.
- CONRAD B. LINK, *Professor of Floriculture*  
B.S., Ohio State University, 1933; M.S., 1934; PH.D., 1940.
- MARGARET T. LOAR, *Extension Professor, Assistant Home Demonstration Agent Leader*  
B.S., University of Maryland, 1941.
- JOHN W. MAGRUDER, *Extension Professor and County Agent Leader*  
B.S., University of Maryland, 1925; M.S., Cornell University, 1941.
- DELBERT T. MORGAN, *Professor of Botany*  
B.S., Kent State University, 1940; M.A., Columbia University, 1942; PH.D., 1948.
- MARGARET OLIVER, *Extension Professor and Home Demonstration Agent Leader*  
B.S., Huntington College, 1932; M.A., Columbia University, 1954.
- LEO J. POELMA, *Professor of Animal Pathology*  
M.S., University of Maryland, 1928; D.V.M., Kansas City Veterinary College, 1916.
- REGINALD L. REAGAN, *Professor of Veterinary Virology*  
Major, U. S. Army, Retired.
- RUSSELL G. ROTHGEB, *Research Professor in Agronomy*  
B.S., University of Maryland, 1924; M.S., Iowa State College, 1925; PH.D., University of Maryland, 1928.
- EVELYN D. SCOTT, *Extension Professor, Assistant Home Demonstration Agent Leader*  
B.S., South Dakota State College, 1932; M.A., George Washington University, 1958.
- LELAND E. SCOTT, *Professor of Horticultural Physiology*  
B.S., University of Kentucky, 1927; M.S., Michigan State College, 1929; PH.D., University of Maryland, 1943.
- CLYNE S. SHAFFNER, *Professor and Head of Poultry Husbandry*  
B.S., Michigan State College, 1938; M.S., 1940; PH.D., Purdue University, 1947.
- JAMES B. SHANKS, *Professor of Floriculture*  
B.S., Ohio State University, 1939; M.S., 1946; PH.D., 1949.
- MARY S. SHORB, *Research Professor, Nutrition*  
B.S., College of Idaho, 1928; SC.D., Johns Hopkins University, 1933.
- FRANCIS C. STARK, *Professor of Vegetable Crops*  
B.S., Oklahoma A. & M., 1940; M.S., University of Maryland, 1941; PH.D., 1948.

## Faculty

ORMAN E. STREET, *Professor of Agronomy*

B.S., South Dakota State College, 1924; M.S., Michigan State College, 1926; PH.D., 1933.

CLIFFORD C. TAYLOR, *Visiting Professor of Agricultural Economics*

B.S., Colorado State College, 1917; M.S., Iowa State College, 1923; M.A., Harvard University, 1926; PH.D., 1930.

ARTHUR H. THOMPSON, *Professor of Pomology*

B.S., University of Minnesota, 1941; PH.D., University of Maryland, 1945.

ALBERT F. VIERHELLER, *Extension Professor of Horticulture*

B.S., West Virginia University, 1918; M.S., University of Maryland, 1923.

WILLIAM P. WALKER, *Professor of Agricultural Economics*

B.S., University of Maryland, 1921; M.S., 1924.

KENNETH F. WARNER, *Professor of Extension Studies and Training*

B.S., University of Nebraska, 1912; M.S., University of Minnesota, 1915; D.AGR., University of Nebraska, 1954.

LESLIE O. WEAVER, *Extension Professor of Plant Pathology*

B.S.A., Ontario Agricultural College, 1934; PH.D., Cornell University, 1943.

W. SHERARD WILSON, *Extension Professor and State 4-H Club Agent*

B.S., University of Maryland, 1932.

## Associate Professors

JOHN H. AXLEY, *Associate Professor of Soils*

B.A., University of Wisconsin, 1937; PH.D., 1945.

FRANK L. BENTZ, JR., *Associate Professor of Soils and Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

THEODORE L. BISSELL, *Extension Associate Professor of Entomology*

B.S., University of Maryland, 1920; M.S., Cornell University, 1936.

GERARD A. BOURBEAU, *Associate Professor of Soils*

B.A., St. Francis Xavier College, 1938; B.S., Laval Quebec University, 1943; M.S., University of Wisconsin, 1946; PH.D., 1948.

RUSSELL G. BROWN, *Associate Professor of Botany*

B.S., West Virginia University, 1929; M.S., 1930; PH.D., University of Maryland, 1934.

ROBERT L. BRUCE, *Extension Associate Professor and Assistant County Agent Leader*

B.S., University of Nebraska, 1949; M.S., Cornell University, 1952.

ROBERT J. BYRNE, *Associate Professor of Veterinary Science*

D.V.M., Cornell University, 1944.

JAMES L. CASON, *Associate Professor of Dairy Husbandry*

B.S., Louisiana Polytechnic Institute, 1948; M.S., Michigan State College, 1950; PH.D., North Carolina State College, 1956.

CORNELIA M. COTTON, *Research Associate, Veterinary Science*

A.B., Cornell University, 1921; M.S., Syracuse University, 1926; PH.D., University of Maryland, 1943.

A. MORRIS DECKER, JR., *Associate Professor of Crops*

B.S., Colorado A. & M., 1949; M.S., Utah State College, 1950; PH.D., University of Maryland, 1953.

HARRY W. DENGLE, *Extension Associate Professor, Forestry*

B.S., Syracuse University, 1935.

RAYMOND N. DOETSCH, *Associate Professor of Microbiology*

B.S., University of Illinois, 1942; M.S., University of Indiana, 1944; PH.D., University of Maryland, 1948.

JAMES RILEY FERGUSON, *Extension Associate Professor of Animal Husbandry*

B.S., Colorado A. & M., 1941; M.S., Cornell University, 1951; PH.D., 1953.

GUY W. GIENGER, *Associate Professor of Agricultural Engineering*

B.S., University of Maryland, 1933; M.S., 1936.

PAUL M. GALBREATH, *Associate Professor of Soil Conservation*

B.S., University of Maryland, 1939; M.S., 1940; LL.B., 1954.

CASTILLO GRAHAM, *Associate Professor of Entomology*

B.S., Mississippi A. & M. College, 1927; M.S., University of Maryland, 1930; PH.D., 1932.

ARTHUR B. HAMILTON, *Associate Professor of Agricultural Economics*

B.S., University of Maryland, 1929; M.S., 1931.

BASIL C. HATZIOLOS, *Associate Professor of Pathology*

D.V.M., Veterinary School of Alfort, France, 1929; DR. VET. IN AN. HUS., Veterinary School of Berlin, Germany, 1932.

JOHN H. HOYERT, *Associate Professor of Agronomy*

B.S., University of Maryland, 1943; M.S., 1949; PH.D., 1951.

ROBERT B. JOHNSON, *Associate Professor of Veterinary Physiology*

A.B., University of South Dakota, 1939.

JACK COLVARD JONES, *Associate Professor of Entomology*

B.S., Alabama Polytechnic Institute, 1942; PH.D., Iowa State College, 1950.

## Faculty

MARK KEENEY, *Associate Professor of Dairy Manufacturing*

B.S., Pennsylvania State College, 1942; M.S., Ohio State University, 1948; PH.D., Pennsylvania State College, 1950.

EMORY C. LEFFEL, *Associate Professor of Animal Husbandry*

B.S., University of Maryland, 1943; M.S., 1947; PH.D., 1953.

ROBERT C. LEFFEL, *Associate Professor of Agronomy*

B.S., University of Maryland, 1948; M.S., Iowa State College, 1950; PH.D., 1952.

WILLIAM A. MATTHEWS, *Associate Professor of Vegetable Crops*

B.S., Virginia Polytechnic Institute, 1928; M.S., University of Maryland, 1930.

JOSEPH F. MATTICK, *Associate Professor of Dairy Manufacturing*

B.S., Pennsylvania State College, 1942; PH.D., 1950.

VIRGINIA MCLUCKIE, *Extension Associate Professor and Home Economist*

B.S., University of Maryland, 1941; M.S., 1953.

CHARLES P. MERRICK, *Extension Associate Professor of Agricultural Engineering*

B.S., University of Maryland, 1933.

AMOS R. MEYER, *Extension Associate Professor of Marketing*

B.S., Ohio State University, 1940.

JEANNE S. MOEHN, (MRS.), *Extension Associate Professor and Family Life Specialist*

B.S., Iowa State University, 1940.

OMAR D. MORGAN, JR., *Associate Professor of Plant Pathology*

B.ED., Illinois State Normal University, 1940; PH.D., University of Illinois, 1950.

JOHN L. MORRIS, *Extension Associate Professor of Dairy Husbandry*

B.S., Iowa State College, 1943; M.S., University of Delaware, 1958.

RAY A. MURRAY, *Associate Professor of Agricultural Economics*

B.S., University of Nebraska, 1934; M.A., Cornell University, 1938; PH.D., 1949.

GILBERT J. PLUMER, *Associate Professor of Veterinary Science*

B.S., University of Maryland, 1949; D.V.M., New York State Veterinary College, Cornell University, 1953.

GEORGE D. QUIGLEY, *Associate Professor of Poultry Husbandry*

B.S., Michigan State College, 1925.

ROBERT D. RAPPLEYE, *Associate Professor of Botany*

B.S., University of Maryland, 1941; M.S., 1947; PH.D., 1949.

CHARLES W. REYNOLDS, *Associate Professor of Vegetable Crops*

B.A., University of Alabama, 1941; B.S., Alabama Polytechnic Institute, 1947; M.S., 1949; PH.D., University of Maryland, 1954.

WADE H. RICE, *Extension Associate Professor of Poultry Husbandry*  
B.S., North Carolina State College, 1921.

BENJAMIN L. ROGERS, *Extension Associate Professor of Pomology*  
B.S., Clemson College, 1943; M.S., University of Minnesota, 1947; PH.D., University of Maryland, 1950.

VINCENT SCHULTZ, *Associate Professor—Agricultural Biometrician*  
B.S., Ohio State University, 1946; M.S., 1948; PH.D., 1949; M.S., Statistics, Virginia Polytechnic Institute, 1954.

MARK M. SHOEMAKER, *Associate Professor of Landscape Gardening*  
B.A., University of Michigan, 1921; M.L.D., 1922.

HAROLD D. SMITH, *Associate Professor of Agricultural Economics*  
B.A., Bridgewater College, 1943; M.S., University of Maryland, 1947; PH.D., American University, 1952.

EDWARD STRICKLING, *Associate Professor of Soils*  
B.S., Ohio State University, 1937; PH.D., 1949.

WILLIAM C. SUPPLEE, *Research Associate in Poultry Husbandry*  
B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1931.

M. GIST WELLING, *Extension Associate Professor and Assistant County Agent Leader*  
B.S., University of Maryland, 1942; M.S., Cornell University, 1957.

BOYD T. WHITTLE, *Extension Associate Professor, Animal Husbandry*  
B.S., Idaho University, 1947; M.S., Illinois University, 1948.

ROBERT C. WILEY, *Associate Professor of Horticulture Processing*  
B.S., University of Maryland, 1949; M.S., 1950; PH.D., Oregon State College, 1953.

PAUL N. WINN, *Research Associate Professor of Agricultural Engineering*  
B.S., Virginia Polytechnic Institute, 1947; M.S., 1958.

### *Assistant Professors*

GEORGE J. ABRAMS, *Assistant Professor of Apiculture*  
B.S., University of Maryland, 1927; M.S., 1929.

JOHN BURIC, *Assistant Professor of Animal Husbandry*  
B.S., West Virginia University, 1948; M.S., University of Maryland, 1952.

SING C. CHANG, *Assistant Professor in Veterinary Virology*  
B.S., University of Nanking, China, 1929; PH.D., Rutgers University, 1939.

NERI A. CLARK, *Assistant Professor of Agronomy*  
B.S., University of Maryland, 1954; PH.D., 1959.



## Faculty

CHARLOTTE A. CONAWAY, *Extension Assistant Professor and Assistant State 4-H Club Agent*

B.S., University of Maryland, 1947; M.S., University of Wisconsin, 1957.

RICHARD D. CREEK, *Assistant Professor of Poultry Husbandry*

B.S., Purdue University, 1951; M.S., 1954; PH.D., 1955.

JOHN L. CROTHERS, JR., *Extension Assistant Professor, Department of Markets*

B.S., University of Maryland, 1949; M.S., 1954.

DONALD W. DICKSON, *Assistant Professor and Publications Editor*

B.S., Baldwin Wallace College, 1947.

CHARLES P. ELLINGTON, *Extension Assistant Professor of Agronomy*

B.S., University of Georgia, 1950; M.S., University of Maryland, 1952.

KENNETH E. FELTON, *Assistant Professor of Agricultural Engineering*

B.S., University of Maryland, 1950; B.S.C.E., 1951.

RAYMOND A. GALLOWAY, *Assistant Professor of Plant Physiology*

B.S., University of Maryland, 1952; M.S., 1956; PH.D., 1958.

LOREN F. GOYEN, *Assistant Professor and Assistant State 4-H Club Agent*

B.S., Kansas State University, 1951; M.S., University of Maryland, 1959.

FLOYD P. HARRISON, *Assistant Professor of Entomology*

B.S., Louisiana State University, 1951; M.S., 1953; PH.D., University of Maryland, 1955.

ELIZABETH E. HAVILAND, *Assistant Professor of Entomology*

A.B., Wilmington (Ohio) College, 1923; M.A., Cornell University, 1926; M.S., University of Maryland, 1936; PH.D., 1945.

NORMAN V. HELBACKA, *Assistant Professor, Poultry Marketing*

B.S., University of Minnesota, 1952; M.S., 1954; PH.D., 1956.

ROGER W. HEMKEN, *Assistant Professor of Dairy Husbandry*

B.S., University of Illinois, 1950; M.S., 1954; PH.D., Cornell University, 1957.

LAVONIA HILBERT, *Extension Assistant Professor and Clothing Specialist*

B.S., West Virginia University, 1937; M.A., Columbia University, 1946.

HAROLD H. HOECKER, *Extension Assistant Professor of Agricultural Economics*

B.S., Iowa State College, 1941.

WILLIAM L. HOLLIS, *Research Assistant Professor of Vegetable Crops*

B.S., University of Delaware, 1952; M.S., 1954; PH.D., University of Maryland, 1957.

H. PALMER HOPKINS, *Assistant Professor of Agricultural Education*

B.S., Oklahoma A. & M., 1936; M.ED., University of Maryland, 1948.

- HERMAN A. HUNTER, *Extension Assistant Professor of Vegetable Crops*  
B.S., Clemson College, 1923; M.S., University of Maryland, 1926.
- SIDNEY ISHEE, *Assistant Professor of Agricultural Economics*  
B.S., Mississippi State College, 1950; M.S., Pennsylvania State University, 1952;  
PH.D., 1957.
- CARL N. JOHNSON, *Extension Assistant Professor of Landscape Gardening*  
B.S., Michigan State College, 1947.
- WARREN T. JOHNSON, *Assistant Professor of Entomology*  
B.S., Morris Harvey College (W. Va.), 1947; M.S., Ohio State University, 1951;  
PH.D., University of Maryland, 1956.
- JAMES G. KANTZES, *Assistant Professor of Plant Pathology*  
B.S., University of Maryland, 1951; M.S., 1954; PH.D., 1957.
- RAYMOND L. KING, *Assistant Professor of Dairy Manufacturing*  
A.B., University of California, 1955; PH.D., 1958.
- JAMES D. KORNDER, *Assistant Professor of Veterinary Medicine*  
B.S., University of Wisconsin, 1950; M.S., Ohio State University, 1952; D.V.M.,  
1956.
- CONRAD B. KRESGE, *Assistant Professor of Soils*  
B.S., Pennsylvania State University, 1953; M.S., 1956; PH.D., 1959.
- CONRAD H. LIDEN, *Assistant Professor, Administrative Assistant to the Dean*  
B.S., University of Maryland, 1942; M.S., 1949.
- FLOYD V. MATTHEWS, JR., *Assistant Professor of Agricultural Engineering*  
B.S., Virginia Polytechnic Institute, 1950; M.S., Oklahoma A. & M., 1951.
- JOHN A. MEADE, *Assistant Professor of Crops*  
B.S., University of Maryland, 1953; M.S., 1955; PH.D., Iowa State University, 1958.
- JAMES R. MILLER, *Assistant Professor of Soils*  
B.S., University of Maryland, 1951; M.S., 1953; PH.D., 1956.
- JOSEPH L. NEWCOMER, *Assistant Professor—Seed Programs*  
B.S., University of Maryland, 1950; M.S., 1955.
- JAMES L. NICHOLSON, *Extension Assistant Professor of Poultry Husbandry*  
B.S., University of Maryland, 1951.
- ROBERT A. PATERSON, *Assistant Professor of Botany*  
B.A., University of Nevada, 1949; M.A., Stanford University, 1951; PH.D., University  
of Michigan, 1957.

## Faculty

- JUDITH A. PHEIL (MRS.), *Extension Assistant Professor in Food and Nutrition*  
B.S., Hood College, 1931.
- JOANNE W. REITZ, *Extension Assistant Professor and Home Management Specialist*  
B.S., Indiana State Teachers College, 1946; M.S., Pennsylvania State University, 1952.
- ANNIE N. ROGERS, *Extension Assistant Professor, Program Planning Specialist*  
B.A., Columbia College, 1938; M.ED., University of Maryland, 1955.
- PAUL W. SANTELMANN, *Assistant Professor, Crops*  
B.S., University of Maryland, 1950; M.S., Michigan State College, 1952; PH.D., Ohio State University, 1954.
- JOHN R. SCHABINGER, *Extension Assistant Professor of Dairy Husbandry*  
B.S., University of Delaware, 1943; M.S., Pennsylvania State College, 1947.
- HUGH D. SISLER, *Assistant Professor in Plant Pathology*  
B.S., University of Maryland, 1949; M.S., 1951; PH.D., 1953.
- CLODUS R. SMITH, *Assistant Professor of Agricultural Education*  
B.S., Oklahoma State University, 1950; M.S., 1955.
- ROBERT J. SNYDER, *Assistant Professor of Vegetable Crops*  
B.S., Pennsylvania State College, 1949; M.S., 1951; PH.D., Pennsylvania State University, 1955.
- ALLEN L. STEINHAUER, *Assistant Professor of Entomology*  
B.S., University of Manitoba, 1953; M.S., Oregon State College, 1955; PH.D., 1958.
- GEORGE A. STEVENS, *Extension Assistant Professor of Agricultural Economics*  
B.S., Virginia Polytechnic Institute, 1941; M.S., 1949; PH.D., University of Maryland, 1957.
- WOLCOTT E. STEWART, *Assistant Professor of Dairy Husbandry*  
B.S., Cornell University, 1953; M.S., 1956; PH.D., 1957.
- DANIEL A. SWOPE, *Assistant Professor of Agricultural Economics*  
B.S., Pennsylvania State University, 1942; M.S., Cornell University, 1943; PH.D., Pennsylvania State University, 1958.
- BERNARD A. TWIGG, *Extension Assistant Professor*  
B.S., University of Maryland, 1952; M.S., 1955; PH.D., 1959.
- JOHN H. VANDERSALL, *Assistant Professor of Dairy Husbandry*  
B.S., Ohio State University, 1950; M.S., 1954; PH.D., 1959.
- DONALD O. WIERSIG, *Assistant Professor of Veterinary Medicine*  
D.V.M., Iowa State College, 1949.

- FRANK H. WILCOX, *Assistant Professor of Poultry Husbandry*  
 B.S., University of Connecticut, 1951; M.S., Cornell University, 1953; PH.D., 1955.
- WALTER L. WILLIAMS, *Assistant Professor of Dairy Husbandry*  
 B.S., University of Missouri, 1952; PH.D., 1955.
- JACK B. WILSON, *Assistant Professor of Plant Pathology*  
 B.S., West Virginia University, 1953; M.S., 1954; PH.D., 1957.
- JOHN W. WYSONG, *Assistant Professor of Agricultural Economics*  
 B.S., Cornell University, 1953; M.S., University of Illinois, 1954; PH.D., Cornell University, 1957.
- EDGAR P. YOUNG, *Assistant Professor of Animal Husbandry*  
 B.S., Ohio State University, 1954; M.S., 1956; PH.D., 1958.

### Instructors

- CLEMENTINE B. ANSLINGER, *Extension Instructor in Marketing*  
 B.A., College of St. Rose, 1936.
- ROBERT J. BEITER, *Instructor in Agricultural Economics*  
 B.S., University of Maryland, 1952; M.S., 1957.
- MELVIN C. BRENNAN, *Instructor, Visual Aids*  
 B.S., University of Maryland, 1952.
- THOMAS J. CORCORAN, *Extension Instructor and Information Specialist*  
 B.S., University of Illinois, 1949.
- SANFORD FARWELL, *Extension Instructor and Exhibits Specialist*  
 B.A., Rhode Island School of Design, 1954.
- WALLACE C. HARDING, JR., *Extension Instructor in Entomology*  
 B.S., University of Maryland, 1951; M.S., 1956.
- GROVER HARRIS, *Extension Instructor in Poultry Husbandry*  
 B.S., West Virginia University, 1952; M.S., 1956.
- LE MOYNE HOGAN, *Instructor in Horticulture*  
 B.S., Louisiana State University, 1953; M.S., 1957.
- DONALD S. HUDSON, *Extension Instructor in Agricultural Economics*  
 B.S., Cornell University, 1949.
- ELROY R. KRESTENSEN, *Instructor in Entomology*  
 B.S., University of Florida, 1949; M.S., 1951.
- WILLIAM G. LANGSTON, *Extension Instructor in Agricultural Economics*  
 B.S., Virginia Polytechnic Institute, 1950; M.S., 1954.

## Faculty

M. LEE MC GOOGAN, *Extension Instructor and Information Specialist*  
B.S., University of Georgia, 1934; M.S., University of Wisconsin, 1959.

RALPH E. MOTSINGER, *Extension Instructor in Agronomy*  
B.S., North Carolina State College, 1956.

GRAY N. NUCKOLS, JR., *Instructor in Agricultural Economics*  
B.S., Virginia Polytechnic Institute, 1953.

BURNELL K. REBERT, *Extension Instructor, Marketing*  
B.S., Elizabethtown College, 1947.

DONALD J. SEELEY, *Instructor in Dairy Technology*  
B.S., Virginia Polytechnic Institute, 1950.

HERMAN S. TODD, *Instructor in Horticulture*  
B.S., Ohio State University, 1937.

JOSEPH T. WHITLAW, JR., *Instructor in Entomology*  
B.S., Clemson College, 1955; M.S., University of Maryland, 1956.

## Research Associate

ESAM AHMED, *Research Associate in Horticulture*  
B.S., Cairo University, 1945; M.S., Alexander University, 1953; PH.D., University of Maryland, 1957.

## Research Fellow

CONSTANTINE A. SOROKIN, *Research Fellow, Plant Physiology*  
Diploma in Agronomy, Donn Agricultural Institute; M.A., Russian Academy of Agricultural Science, 1936; PH.D., University of Texas, 1955.

## Lecturers

REECE I. SAILER, *Lecturer in Entomology*  
A.B., University of Kansas, 1938; PH.D., 1942.

HAROLD H. SHEPARD, *Lecturer in Entomology*  
B.S., Massachusetts State College, 1924; M.S., University of Maryland, 1927; PH.D. Massachusetts State College, 1931.

## Emeriti

CHARLES O. APPLEMAN, *Professor of Plant Physiology, Emeritus*  
PH.D., University of Chicago, 1910.

ERNEST N. CORY, *Professor of Entomology, Emeritus*  
B.S., Maryland Agricultural College, 1909; M.S., 1913; PH.D., American University, 1926.



- SAMUEL H. DEVAULT, *Professor of Agricultural Economics and Marketing, Emeritus*  
 A.B., Carson-Newman College, 1912; A.M., University of North Carolina, 1915;  
 PH.D., Massachusetts State College, 1931.
- WILLIAM B. KEMP, *Director of Experiment Station, Emeritus*  
 B.S., University of Maryland, 1912; PH.D., American University, 1928.
- JOHN B. S. NORTON, *Professor of Botany, Emeritus*  
 B.S., Kansas State College, 1896; M.S., 1900; SC.D., (HON.), University of Maryland.
- THOMAS B. SYMONS, *Dean of Agriculture, Emeritus*  
 B.S., Maryland Agricultural College, 1902; M.S., Maryland State College, 1905;  
 D. AGR., University of Maryland, 1918.

*\*Supervising Teachers in Agriculture*

- AHALT, LOUIS F., B.S., *University of Maryland*, 1940; M.S., 1952.  
 Middletown High School, Middletown, Maryland.
- BAER, WILFRED O., B.S., *The Pennsylvania State University*, 1942; M.S., 1952  
 Sudlersville High School, Sudlersville, Maryland.
- BIGGS, W. HARLAN, B.S., *University of Maryland*, 1933  
 South Hagerstown High School, Hagerstown, Maryland.
- LEWIS, GLENN W., B.S., *University of Maryland*, 1938; M.S., 1953  
 Easton High School, Easton, Maryland.
- MILLER, HARRY T., B.S., *University of Maryland*, 1950; M.S., 1952  
 Frederick High School, Frederick, Maryland.
- POPE, JAMES L., B.S., *University of Maryland*, 1957  
 Gaithersburg High School, Gaithersburg, Maryland.
- REID, J. MARTIN, B.S., *University of Maryland*, 1950  
 North Dorchester High School, Hurlock, Maryland.
- SCOTT, JOSEPH K., B.A., *Bridgewater College*, 1935; M.S., *Virginia Polytechnic Institute*, 1940  
 Williamsport High School, Williamsport, Maryland.
- SPARKS, LORING T., B.S., *University of Maryland*, 1953  
 Hereford High School, Parkton, Maryland.
- THOMPSON, JOHN L., B.S., *University of Maryland*, 1951; M.S., 1959  
 Frederick High School, Frederick, Maryland.
- WATKINS, DONALD E., B.S., *University of Maryland*, 1923; M.S., *Cornell University*, 1924  
 Gaithersburg High School, Gaithersburg, Maryland.

\*Teachers of Vocational Agriculture who supervise student teachers during the practice teaching period in cooperation with the Department of Agricultural Education.



COLLEGE  
of  
ARTS AND SCIENCES

Catalog Series 1960-1961



UNIVERSITY OF MARYLAND

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# UNIVERSITY CALENDAR

## FALL SEMESTER 1959

### JANUARY 1960

- 4 Monday—Christmas Recess Ends 8 a.m.
- 20 Wednesday—Pre-Examination Study Day
- 21-27 Thursday to Wednesday, inclusive—Fall Semester Examinations

## SPRING SEMESTER 1960

### FEBRUARY

- 1-5 Monday to Friday—Spring Semester Registration
- 8 Monday—Instruction Begins
- 22 Monday—Washington's Birthday Holiday

### MARCH

- 25 Friday—Maryland Day

### APRIL

- 14 Thursday—Easter Recess Begins After Last Class
- 19 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 18 Wednesday—Military Day
- 26 Thursday—Pre-Examination Study Day

- May 27- } Friday to Friday, inclusive—Spring Semester Examinations
- June 3 }
- 29 Sunday—Baccalaureate Exercises
- 30 Monday—Memorial Day, Holiday

### JUNE

- 4 Saturday—Commencement Exercises

## SUMMER SESSION 1960

### JUNE 1960

- 27 Monday—Summer Session Registration
- 28 Tuesday—Summer Session Begins

### AUGUST

- 5 Friday—Summer Session Ends

## SHORT COURSES 1960

### JUNE 1960

- 20-25 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 8-13 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 6-9 Tuesday to Friday—Firemen's Short Course

# UNIVERSITY CALENDAR

## FALL SEMESTER 1960

### SEPTEMBER

- 12-16 Monday to Friday—Fall Semester Registration
- 19 Monday—Instruction Begins

### NOVEMBER

- 23 Wednesday—Thanksgiving Recess Begins After Last Class
- 28 Monday—Thanksgiving Recess Ends 8 a.m.

### DECEMBER

- 20 Tuesday—Christmas Recess Begins

### JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day Holiday
- 25 Wednesday—Pre-Examination Study Day

- Jan. 26- } Thursday to Wednesday, inclusive—Fall Semester Examinations
- Feb. 1 }

## SPRING SEMESTER 1961

### FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday Holiday

### MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

### APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 17 Wednesday—Military Day
- 30 Tuesday—Memorial Day, Holiday

### JUNE

- 2 Friday—Pre-Examination Study Day
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 4 Sunday—Baccalaureate Exercises
- 10 Saturday—Commencement Exercises

## SUMMER SESSION 1961

### JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

### AUGUST

- 4 Friday—Summer Session Ends

## SHORT COURSES 1961

### JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 7-12 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

BOARD OF REGENTS  
and  
MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK <i>Chairman</i> .....	1966
McCormick and Company, 414 Light Street, Baltimore 2	
EDWARD F. HOLTER <i>Vice-Chairman</i> .....	1968
The National Grange, 744 Jackson Place, N.W., Washington 6	
B. HERBERT BROWN <i>Secretary</i> .....	1960
The Baltimore Institute, 10 West Chase Street, Baltimore 1	
HARRY H. NUTTLE <i>Treasurer</i> .....	1966
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LOUIS L. KAPLAN <i>Assistant Secretary</i> .....	1961
5800 Park Heights Avenue, Baltimore 15	
ENOS S. STOCKBRIDGE <i>Assistant Treasurer</i> .....	1960
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THOMAS W. PANGBORN .....	1965
The Pangborn Corporation, Pangborn Blvd., Hagerstown	
THOMAS B. SYMONS .....	1963
Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	
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WILLIAM C. WALSH .....	1968
Liberty Trust Building, Cumberland	
MRS. JOHN L. WHITEHURST .....	1967
4101 Greenway, Baltimore 18	

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Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

# OFFICERS OF ADMINISTRATION

## *Principal Administrative Officers*

### *WILSON H. ELKINS, President*

B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936;  
D. PHIL., 1936.

### *ALBIN O. KUHN, Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

### *ALVIN E. CORMENY, Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

### *R. LEE HORNBAKE, Dean of the Faculty*

B.S., State Teachers College, California, Pa., 1934; M.A., Ohio State University, 1936;  
PH.D., 1942.

### *FRANK L. BENTZ, JR., Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

## *Emeritus*

### *HARRY C. BYRD, President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

## *Administrative Officers of the Schools and Colleges*

### *MYRON S. AISENBERG, Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

### *VERNON E. ANDERSON, Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

### *RONALD BAMFORD, Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

### *GORDON M. CAIRNS, Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

### *RAY W. EHRENSBERGER, Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

### *NOEL E. FOSS, Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.

### *LESTER M. FRALEY, Dean of the College of Physical Education, Recreation, and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.



FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940;  
ED.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

B.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University  
of Denver, 1942; M.B.A. in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agricultural Experiment Station and Head, Department  
of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D.,  
University of Maryland, 1933.

ROGER HOWELL, *Dean of the School of Law*

B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland,  
1917.

WILBERT J. HUFF, *Director, Engineering Experiment Station*

B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale Uni-  
versity, 1917; D.SC. (HON.), Ohio Northern University, 1927.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945;  
PH.D., Pennsylvania State University, 1953.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

PAUL E. NYSTROM, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A.,  
Harvard University, 1948; D.P.A., 1951.

J. FREEMAN PYLE, *Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

LEON P. SMITH, *Dean of the College of Arts and Sciences*

B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930;  
Diplome de l'Institut de Touraine, 1932.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical  
Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929;  
PH.D. (HON.), University of Louisville, 1946.

### *General Administrative Officers*

G. WATSON ALGIRE, *Director of Admissions and Registrations*

B.A., University of Maryland, 1930; M.S., 1931.

THEODORE R. AYLESWORTH, *Professor of Air Science and Head, Department of  
Air Science*

B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania, 1949.

NORMA J. AZLEIN, *Registrar*

B.A., University of Chicago, 1940.

- B. JAMES BORRESON, *Executive Dean for Student Life*  
B.A., University of Minnesota, 1944.
- DAVID L. BRIGHAM, *Director of Alumni Relations*  
B.A., University of Maryland, 1938.
- C. WILBUR CISSEL, *Director of Finance and Business*  
B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.
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A.B., University of Maryland, 1930.
- LESTER M. DYKE, *Director of Student Health Service*  
B.S., University of Iowa, 1936; M.D., University of Iowa, 1926.
- GEARY F. EPPLEY, *Dean of Men*  
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
- HARRY D. FISHER, *Comptroller and Budget Officer*  
B.S., University of Maryland, 1945.
- GEORGE W. FOGG, *Director of Personnel*  
B.A., University of Maryland, 1926; M.A., 1928.
- ROBERT J. MCCARTNEY, *Director of University Relations*  
B.A., University of Massachusetts, 1941.
- GEORGE W. MORRISON, *Associate Director and Supervising Engineer Physical Plant (Baltimore)*  
B.S., University of Maryland, 1927; E.E., 1931.
- HOWARD ROVELSTAD, *Director of Libraries*  
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S. Columbia University, 1940.
- ADELE H. STAMP, *Dean of Women*  
B.A., Tulane University, 1921; M.A., University of Maryland, 1924.
- GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*  
B.S., University of Maryland, 1933.

### *Division Chairmen*

- JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*  
B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.
- HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*  
B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.
- WILBERT J. HUFF, *Chairman of the Division of Physical Sciences*  
B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale University, 1917; D.SC., (HON.), Ohio Northern University, 1927.
- CHARLES E. WHITE, *Chairman of the Lower Division*  
B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.
- ADOLF E. ZUCKER, *Chairman of the Division of Humanities*  
B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.

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# THE COLLEGE

## General Information

THE COLLEGE OF ARTS AND SCIENCES OFFERS ITS STUDENTS A LIBERAL education. It seeks to develop graduates who can deal intelligently with the problems which confront them and whose general education will be a continuing source not only of material profit, but of genuine personal satisfaction. It also offers each student the opportunity to concentrate in the field of his choice; this element of depth serves both as an integral part of his education and as a foundation for further professional training or pursuits.

Students in other colleges of the University are offered training in fundamental courses that serve as a background for their professional education.

The courses required by the University for the baccalaureate degree in any college emphasize the development and nature of American civilization. All of these courses except one are given by the College of Arts and Sciences.

## HISTORY

This college is an outgrowth of the Division of Language and Literature and the Division of Applied Science and the later School of Liberal Arts of Maryland State College. In 1921 the School of Liberal Arts and the School of Chemistry were combined and other physical and biological sciences were brought into the newly formed College of Arts and Sciences. In later reorganizations some departments have been added and some transferred to the administrative control of other colleges.

## REQUIREMENTS FOR ADMISSION

The requirements for admission to the College of Arts and Sciences are, in general, the same as those for admission to the other colleges and schools of the University. Application must be made to the Director of Admissions, University of Maryland, College Park, Maryland.

The student who intends to pursue a program of study in the College of Arts and Sciences should include the following subjects in his high school program: English, 4 units; college preparatory mathematics (algebra, plane geometry), 3 or 4 units; foreign language, 2 or more units; biology, chemistry, or physics, 2 units; history and social sciences, 1 or more units.

The student who wishes to major in chemistry, mathematics, physics, botany, microbiology, zoology, or who wishes to follow a pre-medical or pre-dental program, should include 4 units of college preparatory mathematics (algebra, plane geometry, trigonometry, and more advanced mathematics, if available). He should also include chemistry and physics.



A complete statement of admission requirements and policies will be found in the publication entitled *An Adventure in Learning*. A copy may be obtained by writing to the Office of University Relations, North Administration Building, University of Maryland, College Park, Maryland.

### COSTS

Actual annual costs of attending the University include: \$185.00 fixed charges; \$101.00 special fees; \$400.00 board; \$210.00 to \$240.00 lodging for Maryland residents, or \$260.00 to \$290.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new registrants. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee. A charge of \$300.00 is assessed students who are non-residents of the State of Maryland.

For a more detailed statement of these costs write for a copy of the publication entitled *An Adventure in Learning*.

### DEGREES

The degrees conferred on students who have met the requirements prescribed by the College of Arts and Sciences are Bachelor of Arts, Bachelor of Science, and Bachelor of Music.

Students of this College who complete satisfactorily curricula with majors in departments of the humanities or social sciences are awarded the degree of Bachelor of Arts.<sup>1</sup> Those who complete satisfactorily curricula with majors in departments of biological or physical sciences are awarded the degree of Bachelor of Science.<sup>2</sup> Those who complete satisfactorily a special professional program in the Department of Music are awarded the degree of Bachelor of Music.

Students who complete satisfactorily the prescribed combined program of Arts and Sciences and Medicine, or of Arts and Sciences and Dentistry, will be granted the degree of Bachelor of Science. Students who complete satisfactorily the prescribed combined program of Arts and Sciences and Law will be granted the degree of Bachelor of Arts.

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<sup>1</sup>The Departments of Economics, Geography, and Government and Politics, although administratively in the College of Business and Public Administration, offer courses for Arts and Sciences students. Majors may be elected in these departments as in those of the other departments of the Division of Social Sciences which are administered by the College of Arts and Sciences.

<sup>2</sup>The Department of Botany, although administered by the College of Agriculture, offers courses for Arts and Sciences students. A major may be elected in this department as in those of the other departments of the Division of Biological Sciences administered by the College of Arts and Sciences.

## RESIDENCE

The last thirty semester hours credit of any curriculum leading to a baccalaureate degree in the College of Arts and Sciences must be taken in residence in this University.

Students working for one of the combined degrees must earn the last 30 semester hours credit of the arts program in residence in the College of Arts and Sciences, College Park.

The complete statement of this requirement may be found in the University publication, *University General and Academic Regulations*.

## FOR ADDITIONAL INFORMATION

Detailed information concerning fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September of each year to all undergraduate students, and again in February to all new undergraduate students not previously enrolled in the preceding fall semester.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

### COLLEGES LOCATED AT COLLEGE PARK:

Dean  
(College in which you are interested)  
The University of Maryland  
College Park, Maryland

### PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean  
(School in which you are interested)  
The University of Maryland  
Lombard and Greene Streets  
Baltimore 1, Maryland

## Academic Information

### GENERAL REQUIREMENTS FOR DEGREES

The baccalaureate degree from the College of Arts and Sciences may be conferred upon a student who has satisfied the following requirements:

1. University requirements.
2. College of Arts and Sciences requirements.

A minimum of 120 semester hours credit in academic subjects other than basic air science is required for a bachelor's degree. Men must acquire in addition 8 semester hours in Basic Air Science, and 4 semester hours in physical activities. Women must acquire in addition 4 semester hours in hygiene and 4 semester hours in physical activities.

### WORK IN THE FRESHMAN AND SOPHOMORE YEARS

The work of the first two years in the College of Arts and Sciences is designed to give the student a basic general education, and to prepare him for concentration in the latter part of his course.

It is the student's responsibility to develop in these earlier years such proficiency in basic subjects as may be necessary for his continuation in the field of his special interest. Personal aptitude and a general scholastic ability must also be demonstrated, if permission to pursue a major study is to be obtained.

The student should follow the curriculum for which he is believed to be best fitted. It will be noted that a common group of studies is required of all students who are candidates for a bachelor's degree. These subjects should be taken, if possible, during the freshman and sophomore years.

### THE PROGRAM IN AMERICAN CIVILIZATION

The University considers that it is important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American Civilization. This program is also designed to provide the student with a general educational background.

Work in American civilization is offered at three distinct academic levels. The first level is required of all freshmen and sophomores at the University and is described below. The second level is for undergraduate students wishing to carry a major in this field. The third level is for students desiring to do graduate work in this field (see catalog for the Graduate School).

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

The 24 semester hours in American civilization are as follows:

1. English (12 hours, Eng. 1, 2 and 3, 4 or 5, 6), American history (6 hours, H. 5, 6), and American government (3 hours, G. & P. 1) are required

subjects; however, students who qualify in one, two, or all three of these areas by means of University administered tests are expected to substitute certain elective courses. Through such testing a student may be released from 3 hours of English (9 hours remaining an absolute requirement), 3 hours of American history (3 hours remaining as an absolute requirement), and 3 hours of American government. Students released from 3 hours of English will take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in history will take H. 56 instead of H. 5 and 6. Students who have been exempted from courses in English, American history, or American government may not take such courses for credit.

*Special note for foreign students:*

The foreign student is required to take a special classification test in English before registering for the required English courses. He may be required to take Foreign Language 1 and 2—English for Foreign Students—*before* registering for English 1.

The foreign student may meet the foreign language requirement by taking additional courses in English as stated below under the foreign language requirement.

2. For the additional hours of the 24 hours required the student elects one course from the following group (Elective Group I):

Econ. 37—Fundamentals of Economics (not open to freshmen; students who may wish to take additional courses in economics should substitute Econ. 31 for Econ. 37).

Phil. 1—Philosophy for Modern Man.

Psych. 1—Introduction to Psychology.

Soc. 1—Sociology of American Life.

3. Students who, on the basis of tests, have been released from 3, 6 or 9 hours in otherwise required courses in English, American history, or American government (see 1 above), shall select the replacements for these courses from any or all of the following groups: (a) more advanced courses in the same department as the required courses in which the student is excused, or (b) Elective Group I (see 2 above) provided that the same course may not be used as both a Group I and a Group II choice, or (c) Elective Group II. Group II consists of the following 3-hour courses:

H. 2—History of Modern Europe; either H. 51 or 52—The Humanities; either Music 20—Survey of Music Literature or Art 22—History of American Art; and Soc. 5—Anthropology.

#### AIR SCIENCE, PHYSICAL EDUCATION AND HEALTH

1. Basic Air Science for men—eight semester hours. Required freshman and sophomore years.



2. Health for women—four semester hours. Required freshman year.

3. Physical Activities for men and women—four semester hours. Required freshman and sophomore years.

All male students, unless specifically exempted under University regulations, are required to take Basic Air Science training for a period of two years. The successful completion of this course is a prerequisite for graduation and it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who have not fulfilled this requirement will complete the course or take it until graduation, whichever occurs first.

Selected students who wish to do so may, with proper approval, carry as electives during their junior and senior years Advanced Air Science courses which lead to a regular or reserve commission in the United States Air Force.

For further details concerning the requirements in air science instruction write to the Editor of Publications, University of Maryland, College Park, Maryland, for a copy of the publication titled *An Adventure in Learning*.

#### COLLEGE REQUIREMENTS

1. Foreign language—twelve semester hours in one language, unless otherwise specified. The languages which may be offered to meet this requirement are French, German, Hebrew, Italian, Latin, Greek, Russian, Spanish, and Chinese.

Language conversation courses, 3, 8, or 9, are not to be taken to meet the college requirement of 12 hours of language unless the student has finished the second semester of second year French, German, Spanish, etc. (5, 7, or 17).

Foreign students may satisfy this requirement by offering twelve hours of English in addition to the regular English requirement. The special course in English for foreign students (Foreign Language 1, 2) may be included in the additional hours of English. This option may not be used by pre-medical students.

A foreign student may not meet the foreign language requirement by taking freshman or sophomore courses in his native language.

2. Natural science and mathematics—twelve semester hours, unless otherwise specified. Candidates for the A.B. degree must demonstrate eligibility to take Math. 10 or must complete satisfactorily Math. 3. The science courses elected require the approval of the Dean; they will be selected from the Departments of Botany, Chemistry, Entomology, Geology, Microbiology, Physics, Zoology. At least one course must include laboratory experience and one course must be elected in each of the Divisions of Biological and Physical Sciences except in the case of students whose science courses are specifically prescribed in their curricula.



3. Speech—two or three semester hours in accordance with the particular curriculum.

4. Major and minor requirements—When a student has completed satisfactorily the requirements of the freshman and sophomore years he will select a major in one of the departments of an upper division and for graduation will complete a departmental major and a minor. The courses constituting the major and the minor must conform to the requirements of the department in which the major work is done.

The student must have an average of not less than "C" in the introductory courses in the field in which he intends to major.

A major shall consist, in addition to the underclass departmental requirements, of 24-40 hours, of which at least twelve must be in courses numbered 100 or above.

A minor in programs leading to the A. B. degree, shall consist of a coherent group of courses totalling 18 semester hours in addition to the requirements listed above. At least six of the 18 hours must be in a single department in courses numbered 100 or above. The courses comprising the minor must be chosen with the approval of the major department.

No minor is required in programs leading to the B. S. degree, but the student must take such supporting courses in science or other fields as are required by his major department.

The average grade of the work taken in the major field must be at least "C;" some departments will count toward satisfaction of the major requirement no course completed with a grade of less than "C." The average grade of the work taken in the major and minor fields combined must be at least "C." A general average of "C" in courses taken at the University of Maryland is required for graduation.

#### JUNIOR REQUIREMENTS

A student must acquire a minimum of 56 academic semester hours with an average grade of at least "C" in the freshman and sophomore years before he will be permitted to begin advanced work on his major and minor. See *University General and Academic Regulations* for full statement of this rule.

#### NORMAL LOAD

The normal load for students in this college is 15 semester hours credit per semester, exclusive of the required work in physical activities, air science, and hygiene.

A student must have the approval of his adviser and dean to take more than the normal program prescribed in his curriculum.

#### ADVISERS

Each freshman and sophomore in this college will be assigned to a faculty

adviser who will help the student, during his first two years, to select his courses and to determine what his field of major concentration should be. Juniors in the combined programs will continue in the same system.

Other juniors and seniors will consider the head of their major department, or his designated assistant, their adviser, and should consult him about the arrangements of their schedules of courses.

#### ELECTIVES IN OTHER COLLEGES AND SCHOOLS

A limited number of courses taken in other colleges and schools of the University may be counted for elective or minor credit toward a degree in the College of Arts and Sciences.

The number of credits which may be accepted from the various colleges and schools is as follows: College of Education—24; all other colleges—20. The combined credits from these colleges and schools shall not exceed 20 (or 24 if courses in education are included). Schools of Dentistry, Law, and Medicine—in combined degree programs the first year of professional work must be completed.

#### CERTIFICATION OF HIGH SCHOOL TEACHERS

If courses are properly chosen in the field of education, a prospective high school teacher can prepare for high school positions, with a major and minor in one of the departments of this College. A student who wishes to work for a teacher's certificate should consult his adviser before the junior year.

#### SPECIAL HONORS

1. A program of readings for special honors in literature is open to undergraduates in any college of the University who have the approval of their dean and of the Head of the Department of English. Candidates are examined on an approved list of literary works including translations from foreign languages. Application may be made to the Head of the Department of English at any time before the beginning of the junior year.

2. The College Independent Studies Program is administered by departmental Committees on Independent Studies and by a College Committee on Independent Studies. Admission to the program is at the beginning of the second semester of the student's junior year. Application must be made not later than four weeks before the end of the first semester of the junior year to the head of the department in which the student wishes to take honors. At the time of application for admission to the program the student must have a three-point cumulative academic average or the recommendation of the appropriate departmental committee. Successful completion of the program will be signaled by appropriate announcement on the commencement program and by citation on the student's academic record and on his diploma.

## GENERAL A.B. CURRICULUM

The following curriculum gives the subjects required of students planning to major in one of the departments of the Divisions of Humanities or Social Studies. Since some departmental majors require prerequisites which should be taken during the first two years, individual programs must be prepared in consultation with the assigned adviser; the elective hours listed may be used for this purpose. Lower division advisers and the heads of the Departments of Music and Sociology have available copies of normal curricula for distribution to students who wish additional information about majors in art, music or sociology.

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature <sup>1</sup> .....	3	3
G. & P. 1—American Government or Group I elective <sup>1</sup> .....	3	..
Group I elective or G. & P. 1 <sup>1</sup> .....	..	3
Foreign Language <sup>2</sup> .....	3	3
Mathematics or Natural Science.....	3-4	3-4
Speech 1—Public Speaking and elective.....	3	3
A. S. 1, 2—Basic Air Science (men).....	2	2
Hea. 2, 4—Health (women).....	2	2
Physical Activities .....	1	1
Total.....	17-19	17-19
<i>Sophomore Year</i>		
Eng. 3, 4 or 5, 6—Composition and English or World Literature <sup>1</sup> .....	3	3
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
Foreign Language (continued).....	3	3
Natural Science or Mathematics.....	3-4	3-4
Elective .....	3	3-6
A. S. 3, 4—Basic Air Science (men).....	2	2
Physical Activities .....	1	1
Total.....	16-19	16-18

### I. AMERICAN CIVILIZATION

The University has a comprehensive program in American studies. It begins with required courses on the freshman and sophomore level, includes a major for juniors and seniors, and also provides for graduate work on the M.A. and Ph.D. level. (For information concerning the graduate program, see the Graduate School Catalog.)

<sup>1</sup> See The Program in American Civilization on pages 4-5.

<sup>2</sup> A placement test is given during registration week for students wishing to pursue a language they have studied in high school.

The student who majors in American civilization has the advantage of being taught by cooperating specialists from various departments. The committee in charge of the program represents the Departments of English, History, Government and Politics, and Sociology. Members of the committee serve as official advisers to students electing to work in the field.

The program is intended to have generous breadth, but the danger of securing breadth without depth is offset by the requirement of an area of concentration. Studies in American civilization are supplemented by studies in source cultures and interacting cultures; however, in planning a curriculum, students are required to concentrate in one of the four departments primarily concerned with the program. The program must include at least 42 semester hours of work from the departments participating in the program. These credits constitute collectively a major and a minor. At least 20 of these 42 hours of advanced work must be in 100-level courses. All the advanced work should be so distributed that the student will take at least 9 hours in each of three out of the four cooperating departments, including, of course, the department of his concentration.

In his senior year, each major student is required to take a conference course (American Civilization 137, 138) in which the study of American civilization is brought to a focus. During this course, the student analyzes eight or ten important books which reveal fundamental patterns in American life and thought and receives incidental training in bibliographical matters, in formulating problems for special investigation, and in group discussion.

Freshmen and sophomores who are interested in concentrating in American civilization should consult with their Lower Division adviser. Upperclassmen should consult with the Executive Secretary of the American Civilization curriculum, Assistant Professor Beall.

Suggested sample curriculum for American civilization majors:

Junior year: H. 52—The Humanities (3); H. 105 and 106—Social & Economic History of the United States (3, 3); Eng. 150 and 151—American Literature (3, 3); G. & P. 144—American Political Theory (3); Phil. 121—American Philosophy (3); Electives (9).

Senior year: American Civilization 137 and 138—Conference course in American Civilization (3, 3); G. & P. 174—Political Parties (3); Phil. 154—Political and Social Philosophy (3); Soc. 105—Cultural Anthropology (3); Soc. 125—Cultural History of the Negro (3); H. 133 and 134—History of Ideas in America (3, 3); Electives (6).

## II. THE HUMANITIES

### *Art*

Two types of majors are offered in art: Art Major A for those who take the art curriculum as a cultural subject and as preparation for a career for



which art is a necessary background; Art Major B for those who prepare themselves for creative work on a professional basis.

In both types the student begins with the basic courses, and moves to more advanced study of the theory of design and of the general principles involved in visual expression. A large amount of study takes the form of actual practice of drawing and painting. The student, in this way, gains a knowledge of the vocabulary of drawing and painting, and of the methods and procedures underlying good quality of performance.

Art Major B emphasizes the development of craftsmanship and the creative faculty. Art Major A, while including the basic studio courses, necessarily places emphasis on general history, composition, and art appreciation, with subsequent choices of special art epochs for greater detailed study.

Art history and art appreciation are of special interest to students majoring in English, history, languages, philosophy, or music. It is suggested that they schedule Art 9, 11, and 22, Historical Survey of Painting, Sculpture, and Architecture, and History of American Art, as excellent supplementary study for a fuller understanding of their major. Art 20 is recommended for English, languages, philosophy, home economics, and education majors. Art 22, History of American Art, is advised for majors in the American civilization courses. Home economics and horticulture majors are encouraged to schedule basic art courses as a useful means of training observation and developing understanding of, and proficiency in, the visual arts.

Courses required in all art majors: Art 1—Charcoal Drawing (3); Art 5—Basic Design (3); Art 9, 11—Historical Survey of Painting, Sculpture and Architecture (3, 3); Art 20—Art Appreciation (2).

Courses required in cultural art major: Art 22—History of American Art (3).

Course required in creative art major: Art 7—Landscape Painting (3).

The Department of Art reserves the right to retain any work of students for the permanent collection of the University.

### *Classical Languages and Literatures*

No placement tests are given in the Classical Languages. For details on registration for Latin and Greek, see preliminary paragraph at head of course listings below in this catalog.

MAJOR IN LATIN: Latin 1, 2, 3, and 4 or their equivalent must have been completed before a student may begin work on a major in Latin. A student majoring in Latin will then begin his concentration with Latin 5. A major consists of a minimum of twenty-four hours beginning with Latin 5, twelve hours of which must be taken in 100-level courses. A major student who has taken Latin 1, 2, 3, and 4 may use credit so obtained to fulfill the twelve-hour foreign language requirement of the College of Arts and Sciences. Those registering initially for Latin 5 must fulfill this requirement in another foreign language, preferably Greek.



## *Comparative Literature*

Comparative literature courses are offered by the Classics, the English, and the Foreign Language Departments. When it is so recommended by the student's adviser, comparative literature courses may be counted toward a major or minor in English. Requirements for a major in comparative literature include a knowledge of one foreign language and the Introductory Survey, Comparative Literature 101 and 102.

### *English*

Students majoring in English, particularly those who plan to do graduate work, are urged to take work in foreign language in addition to that required for graduation. In selecting minor or elective subjects, it is recommended that students give special consideration to the following: Latin, Greek, French, German, philosophy, history, and fine arts.

Students who major in English must choose 24 hours of the possible 24-40 hours required of a major from courses in several groups, as follows:

1. Three hours in language (Eng. 8, 101, 102, 104, 107).
2. Six hours in major figures (Eng. 104, 115, 116, 121).
3. Nine hours in survey or type courses (six hours from Eng. 110, 111, 112, 113, 120, 122, 123, 125, 126, 129, 130, 134, 135; three hours from Eng. 139, 140, 143, 144, 145, 157).
4. Six hours in American literature (Eng. 148, 150, 151, 155, 156).

### *Foreign Languages and Literatures*

The underclass Department requirements which must be satisfied before a student can begin work toward a major are the courses numbered 1, 2, 4, and 5 (or 1, 2, 6 and 7, or 1, 2, 4 and 17).

Two types of majors are offered in French, German, or Spanish; one for the general student or the future teacher, and the other for those interested in a rounded study of a foreign area for the purpose of understanding another nation through its literature, history, sociology, economics, and other aspects.

LITERATURE AND LANGUAGE MAJOR: Language and literature as such are stressed in the first type of major. Specific minimum requirements beyond the first two years are a semester each of intermediate and advanced conversation (French, German, or Spanish 8 or 9 and 80 or 81), six hours of the introductory survey of literature (French, German, or Spanish 75 and 76), one semester of advanced composition (French, German, or Spanish 121), and any twelve hours in literature courses numbered 100 or above—a total of 27 semester hours. Requirements for a major in Russian comprise 2 hours of intermediate and 3

hours of advanced conversation; 3 hours of composition, Russian 71 or 72; 6 hours introduction to literature, Russian 75 and 76; plus 12 hours in 100-level courses, totaling 26 hours. Beyond this minimum further courses in the Department are desirable and as electives work in American and in comparative literature is strongly recommended; Comparative Literature 101 and 102 are required.

**FOREIGN AREA MAJOR:** The area study major endeavors to provide the student with a knowledge of various aspects of the country whose language he is studying. Specific minimum requirements beyond the first two years are nine hours of conversation (French, German, or Spanish 8, 9, and 80 or 81), six hours of review grammar and composition (French, German, or Spanish 71 and 72), six hours in civilization (French, German, or Spanish 161 and 162 or 163 and 164), and six additional hours in courses numbered 100 or above—a total of 27 semester hours. In addition, Comparative Literature 101 and 102 are required. The student takes, as a minor, eighteen hours in geography, history, political science, sociology, economics, or other human science courses, distributed through these fields in consultation with advisers in the Foreign Language Department.

## *Music*

The functions of the Department are (1) to help the general student develop sound critical judgment and discriminating taste in the art of music; (2) to provide professional training based on a foundation in the liberal arts; (3) to prepare the student for graduate work in the field; (4) to prepare him to teach in the public schools. To this end, two degrees are offered: the Bachelor of Music, with a major in theory-composition, history-literature, or applied music; and the Bachelor of Arts, with a major in music. The Bachelor of Science degree, with a major in music education, is offered in the College of Education.

Courses in music theory, literature, and applied music are open to all students who have completed the specified prerequisites or their equivalents. The University Orchestra, Band, Chapel Choir, Madrigal Singers, Women's Chorus, and Men's Glee Club are likewise open to qualified students.

**THE BACHELOR OF MUSIC DEGREE:** The curriculum leading to the degree of Bachelor of Music is designed for students who wish to prepare for careers as performers or private teachers, or to prepare for music teaching on the college level. The course requirements in the three major areas may be summarized as follows. A list of specific courses is available in the departmental office.

	Major in <i>Theory-Composition</i>	<i>History-Literature</i>	<i>Applied Music</i>
Academic courses			
specified <sup>1</sup>	42 sem. hrs.	42 sem. hrs.	42 sem. hrs.
unspecified	9	9	10
Theory and Literature			
lower division	27	23	23
upper division	16	22	13
Applied Music	26	24	32

In addition, eight semester hours in ensemble courses; Air Science (men), health (women)\*, and physical activities\*.

**THE BACHELOR OF ARTS DEGREE:** The curriculum leading to the Bachelor of Arts degree with a major in music is designed for students whose interests are cultural rather than professional. The departmental requirements include sixteen semester hours in music theory, eighteen semester hours in music history and literature, eight semester hours in applied music, in addition to not more than six semester hours in the larger ensembles. A list of specific courses is available in the departmental office.

### *Philosophy*

The Department's undergraduate courses are designed to help students attain philosophical perspective, clear understanding, and sound critical evaluation concerning the nature of man, his place in the universe, and the significance of the principal types of human experiences and activities.

To those students who wish to explore the field of philosophy, but who have not sufficient free electives to take some of the more specialized courses offered by the Department, three general courses are available. Phil. 1—Philosophy for Modern Man, is a Group I elective in the American Civilization Program. As such it is directed in part toward examining the philosophical basis of American ideas and ideals. But it is concerned also with the general educational aspects of the program and hence deals with the larger philosophical questions relating to the nature of man as a thinking, feeling and valuing member of human society.

In addition to Phil. 1, the Department offers two other courses designed as electives for students who wish to acquaint themselves with the ideas of some of the great philosophers: Phil. 123, 124—Philosophies Men Live By.

To students in other fields who wish to explore the philosophy of their

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<sup>1</sup> University requirement: American Civilization Program, 24 semester hours; College of Arts and Sciences requirements: 12 semester hours in foreign languages, and 6 semester hours in mathematics or science.

\*As required in the general A.B. curriculum.

subjects, the Department offers a choice among a group of specifically related courses: Phil. 52—Philosophy in Literature; Phil. 53—Philosophy of Religion; Phil. 152—Philosophy of Social and Historical Change; Phil. 145—Ethics; Phil. 147—Philosophy of Art; Phil. 154—Political and Social Philosophy; Phil. 155—Logic; Phil. 156—Philosophy of Science; Phil. 158—Philosophy of Language.

To students of literature, history, or the history of ideas, the Department offers historical courses in ancient, medieval, modern, recent and contemporary, Oriental, and American philosophy. The last course is particularly relevant for students of American civilization.

The courses in logic (Phil. 41 and Phil. 155) are recommended in the Arts-Law curriculum and the government and politics program.

Minors in philosophy are especially suitable for students majoring in English, literature, the social sciences, American civilization, psychology, and in the pre-ministry and pre-law fields. Interested students should consult with the Chairman of the Department.

Freshmen and sophomores planning to major in philosophy should consult the Chairman of the Department about preparation for the major.

### *Speech and Dramatic Art*

The courses in this Department have two main functions: (1) to provide training in basic oral communication skills to meet the general needs of undergraduates of the University; (2) to provide integrated specialized training for students who wish to major or minor in speech.

A major may be taken in the Speech Department in one of two general areas, the speech arts or the speech sciences. The speech arts include theater, radio and television, public speaking, and oral interpretation; the speech sciences include phonetics, semantics, speech pathology and audiology. The undergraduate program provides a level of training that will prepare students to enter several professional fields. Specifically, these fields are: (1) teaching speech and dramatic art or directing these activities; (2) radio and television; (3) speech and hearing therapy. In addition, adequate preparation and training for graduate work is provided.

Minors in speech are adapted to meet the needs of students majoring in English, the social sciences, journalism and public relations, elementary education, nursery school—kindergarten education, pre-law and pre-ministry fields.

Prerequisites for all majors in speech are Sp. 1, 3, or 4, 5 and 6, and Zool. 1. Major requirements: 30 hours of courses in speech with 15 hours of courses numbered 100 and above, in either the speech arts or speech sciences. Sp. 111, Seminar, is required of all majors in speech. No grades of "D" in the major field will be counted toward completing the major requirements for graduation.



Specific requirements for professional training in speech and hearing therapy include completion of the general requirements for speech majors with the following additions: Zool. 14, 15; Psych. 1, 5, 131; a minimum of 21 hours of speech sciences at the 100 level.

Qualified students, depending upon specialized interests, are invited to participate in the activities of the University Theater, Radio-Television Guild, and the Calvert Debate Club.

### III. THE SOCIAL SCIENCES

#### *Economics*

Students registered in the College of Arts and Sciences may major in economics. During the freshman and sophomore years prospective economics majors should consult with their Lower Division adviser in Arts and Sciences concerning preparation for the major. Normally Economic Developments (2, 2) is taken during the freshman year and Principles of Economics (3, 3) during the sophomore year.

Juniors and seniors are advised by the faculty of the Department of Economics, which is administered in the College of Business and Public Administration. In addition to the ten lower division credits listed above, economics majors must complete a minimum of 26 credits with an average grade of not less than "C." National Income Analysis (3), Advanced Economic Principles (3) and Elements of Statistics (3) are required. Other courses to meet the requirements of the major are to be selected with the aid of a faculty adviser. Descriptions of courses in economics will be found in the catalog of the College of Business and Public Administration. Additional information about the curriculum in economics may be obtained at the departmental office.

#### *Geography*

Geography is a recognized major field in Arts and Sciences leading to the A.B. degree. Arts and Sciences students may register for its courses and major in geography from a liberal arts point of view, although the Department is administered by the College of Business and Public Administration. Freshmen and sophomores wishing to major in geography should consult their Lower Division advisers and the Department of Geography.

The following courses are required: Geog. 10 and 11 (3, 3); Geog. 30 (3); Geog. 35 (3); Geog. 40 and 41 (3, 3); Geog. 170 (3); Geog. 199 (3); and 15 hours in other geography courses numbered 100 to 198.

The following science courses are required: Bot. 1 (4); Chem. 1 (4); Agron. 114 (4). The following supporting courses are also required: Bot. 113 (2); Econ. 31 and 32 (3, 3); Soc. 105 (3). Certain of these courses are applicable to the minor. Please consult Senior Adviser, Department of Geography.



## *Government and Politics*

Although this Department is administered by the College of Business and Public Administration, government and politics is a recognized major field for students in the College of Arts and Sciences, leading to the A.B. degree. Freshmen and sophomores wishing to major in government and politics should consult their Lower Division advisers about preparation for the major; additional information about the government and politics program may be obtained at the departmental office. Juniors and seniors majoring in government and politics are advised by the faculty of that Department.

For further information concerning the courses offered in government and politics, see the catalog of the College of Business and Public Administration. The government and politics curriculum described in that catalog does not apply to students in the College of Arts and Sciences. Such students must complete instead the following requirements:

1. At least 36 semester hours of government and politics.
2. No course in which the grade is less than "C", made after September 1947, may be counted as part of the major work.
3. An adequate diversification of study in the various fields of government and politics, under the guidance of the faculty of the Department.

If desired, students may specialize in state and local government, public administration, public law, public policy, political theory, comparative government, or international relations.

## *History*

The Department of History recognizes that the study of history supplies the general student with the cultural background for the several fields of knowledge. At the same time the curriculum provides preparation for those entering specific fields of professional activity: (1) the teaching of history and the social sciences at the secondary level, (2) journalism, (3) research and archival work, (4) the diplomatic service. In addition, the curriculum offers adequate preparation and training for those who intend to pursue graduate study.

The program of the undergraduate student majoring in history is planned to insure a diversification of courses with the aim of familiarizing the student with the subject matter and disciplines of the broad fields of history. A faculty adviser, designated by the Department, will assist each undergraduate major in planning his program and in selecting courses to meet both major and minor requirements. The student will be expected to confer at regular intervals with his faculty adviser regarding the progress of his studies.

Undergraduate history majors must meet the following departmental requirements:

1. Every major is required to complete a minimum of 27 semester hours in advanced courses; i. e., H. 51, H. 53, 54 and the series numbered from 100 to 199.

2. Prerequisites for majors are H. 5, 6 or H. 56 (a University of Maryland requirement for the bachelor's degree) and H. 1, 2.

3. Every history major is required to complete the proseminar course, H. 199, three semester hours.

4. The remaining 24 semester hours of the major work in advanced courses are distributed as follows: (a) 12 hours in American history (including Latin American and Canadian) and (b) 12 hours in European and Asian history.

5. No grades of "D" will be counted in computing the hours to satisfy the major requirement.

6. Completion of the minor.

The undergraduate major will, during his junior year, file with his faculty adviser a minor sequence. The minor requirement may be satisfied by (1) a single sequence of 18 semester hours in any one of several related departments such as government and politics, economics, sociology, philosophy, literature, and geography; or (2) a split minor sequence to include two departments, provided a minimum of 9 hours is offered in each department, a total of 18 hours. In certain cases, and only on the basis of an approved written application, the student may offer a combination social science minor sequence of at least 18 hours or a combination humanities minor sequence of at least 18 hours. In all cases the minor sequence must include at least 6 semester hours of 100-level work in a single department. The average grade in the minor must be "C" or better.

## *Psychology*

The Department of Psychology is classed in both the Division of Social Sciences (for the B.A. degree) and the Division of Biological Sciences (for the B.S. degree) and offers educational programs related to both of these fields. The functions of the undergraduate curriculum in psychology are to provide an organized study of the behavior of man, in terms of the biological conditions and social factors which influence such behavior. In addition, the undergraduate program in psychology is arranged to provide a level of training that will equip the students to enter certain professional pursuits which require a background in this field. It is important to note, however, that the undergraduate degree in psychology is not in itself recognized as carrying any professional status.

Departmental requirements toward the B.A. degree with a major in psychology are: Psych. 1, 21, 106, 145, 150; and two from among Psych. 128, 142, and 148; plus 9 additional hours in psychology and/or other departments

selected in conference with the student's major adviser. A minor program is organized to supplement the work in the major, and for the B.A. degree this minor program will ordinarily consist of courses in the social sciences. The departmental requirements for the Bachelor of Science degree are given elsewhere in these pages. No student who has ever received a second grade lower than "C" in the major requirements listed above will be certified for graduation with a major in psychology.

### *Sociology*

The major in sociology offers a liberal education and at the same time provides a background for those professional fields which focus on an understanding of human relationships.

Departmental requirements consist of a minimum of 30 semester hours in sociology and for the minor, a coherent group of courses totalling 18 hours. Of the latter at least 6 hours must be 100-level courses in a single department. Sociology credit with a grade of less than "C" may not be counted toward the major requirement.

Courses required of all sociology majors:—Soc. 1, 2, 183, 186, and 196.

There are several suggested areas of emphasis within the sociology major, some with additional requirements:— (1) General Sociology; (2) Anthropology, (3) Community Studies (rural, urban, and suburban groups and their populations); (4) Crime Control Curriculum (a four year preprofessional program in the field of crime and delinquency and their prevention and control); (5) Sociology-Education (fulfills requirements for secondary teaching certification); (6) Social Institutions (the structure and functioning of social institutions including the family, religion, economic, governmental, and educational); (7) Pre-professional Social Work Curriculum (provides pre-professional preparation for entering a professional social work school, and qualifications for certain social work positions for which post-graduate professional education is not required); (8) Social Psychology; (9) Industrial and Occupational Sociology. A statement of the course requirements and other recommended courses is available in the departmental office.

## GENERAL B.S. CURRICULUM

The curricula required of students majoring in departments of the Divisions of Biological Sciences and Physical Sciences vary much in regard to the year in which University and College required courses are scheduled in order to assure the proper sequential and prerequisite arrangement of major courses. The following curriculum, which gives the subjects required of students who plan to major in departments of the Divisions of Biological or Physical Sciences, is, therefore, quite flexible; individual programs must be prepared in consultation with the assigned adviser. Lower division advisers and department heads have available copies of normal curricula for distribution to students who wish additional information about majors in departments of these divisions.

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature <sup>1</sup> .....	3	3
G. & P. 1—American Government or Group I elective <sup>1</sup> .....	3	..
Group I elective or G. & P. 1 <sup>1</sup> .....	..	3
Speech 7—Public Speaking.....	..	2
Mathematics - Science .....	8-9	8-10
A. S. 1, 2—Basic Air Science (men) .....	2	2
Hea. 2, 4—Health (women) .....	2	2
Physical Activities .....	1	1
	<hr/>	<hr/>
Total .....	17-19	19-20
<i>Sophomore Year</i>		
Eng. 3, 4 or 5, 6—Composition and English or World Literature <sup>1</sup> .....	3	3
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
Foreign Language <sup>2</sup> .....	3	3
Mathematics - Science .....	9-12	9-12
A. S. 3, 4—Basic Air Science (men) .....	2	2
Physical Activities .....	1	1
	<hr/>	<hr/>
Total .....	16-20	16-20

## IV. THE BIOLOGICAL SCIENCES

### *General Biological Sciences*

This program has been prepared for the student who is interested in biology but whose interest has not yet centered in any one of the biological

<sup>1</sup> See The Program in American Civilization on pages 4-5.

<sup>2</sup> A placement test is given during registration week for students wishing to pursue a language they have studied in high school. Some departmental curricula require German. Most of the departments prefer or require that the second year be in scientific French or German (French or German 6, 7).



sciences. This program is also a suitable one for the pre-dental student who plans to earn the B.S. degree before entering dental school. This program, however is not recommended for the pre-dental student. The program includes work in botany, entomology, microbiology, and zoology, and introduces the student to the general principles and methods of each of these biological sciences. The student may then emphasize any one of these areas in completing his program.

By proper selection of courses during the junior and senior years, a student may concentrate his work sufficiently in one area of biology to be able to continue in graduate work in that field. However, a student who is definitely planning to do graduate work would be well-advised to major in one specific field of biology as soon as his interest becomes definite.

The student following this program must meet the general requirements for a degree in the College of Arts and Sciences. He should select French or German to meet the foreign language requirements and Speech 7 (or Speech 1, 2) to fulfill the requirement in speech.

Required introductory courses in the biological sciences: Microb. 1; Bot. 1; Ent. 1; Zool. 1. These courses must be passed with an average grade of at least "C". The pre-dental student must take Zool. 2 as well.

Required supporting courses in mathematics and the physical sciences: Math. 10, 11; Chem. 1, 3; Phys. 10, 11. The student working in most areas of biology will also need a year of organic chemistry (Chem. 31, 32, 33, 34 or Chem. 35, 36, 37, 38). Additional work in chemistry may also be required by the student's adviser, in accordance with the needs of the student's field of emphasis. The pre-dental student must include Chem. 35, 36, 37, 38 in his program.

Advanced courses in the biological sciences: The student must complete at least 30 semester hours of advanced work selected from the fields of botany, microbiology, entomology, and zoology. Of these credits at least 18 must be at the 100 level and taken in at least two of the four departments. The following courses in psychology may be counted as part of the required 30 semester hours but may not be used to satisfy the requirement of 18 semester hours at the 100 level: Psych. 106, 136, 145, 180, 181, 195.

A junior or senior following this curriculum will be advised by the department in which he plans to do the most work.

### *Botany*

Botany is recognized as either a major or minor field in Arts and Sciences, leading to the B.S. degree. The Botany Department is administered by the College of Agriculture, but students register for botany courses and major or minor in this subject just as if the Department were in the College of Arts and Sciences. Course descriptions and further information about the Botany Department are given in the catalog for the College of Agriculture.



Freshmen and sophomores should consult their lower division adviser and also the Botany Department adviser, in planning the major program. The four lower division courses, General Botany—Bot. 1 and 2; Diseases of Plants—Bot. 20; and Plant Taxonomy—Bot. 11, total 14 credit hours and should be taken during the first two years. Sufficient upper division courses to give a total of 40 credit hours in botany must be taken. Included in these will be Plant Physiology—Bot. 101; Plant Microtechnique—Bot. 110; Plant Anatomy—Bot. 111; Plant Ecology—Bot. 102; and electives. The botany electives chosen depend, in part, on the student's chief interest.

To support the courses in botany, major students are required to take General Chemistry—Chem. 1 and 3; Mathematics—Math. 10 and 11 as a minimum; Physics—Phys. 10 and 11; General Zoology—Zool. 1; General Microbiology—Microb. 1; Genetics; and 12 hours of a modern language, preferably German.

### *Microbiology*

The Department of Microbiology functions with three purposes in view. One of these is to provide fundamental training for those students who choose microbiology as a major subject. Two major fields of study are provided: (1) applied microbiology, in preparation for such positions as dairy, sanitary, or agricultural bacteriologists in federal, state, and commercial laboratories, and (2) medical microbiology, in relation to hospital, public health, and clinical laboratories. The second objective of the Department is to provide desirable courses for those students who are majoring in closely allied departments and desire vital supplementary information. Every effort has been made to plan these courses so that they satisfy the demands of these related departments as well as the needs of those students who have chosen microbiology as a major. The third purpose of the Department is to encourage and foster original thought in the pursuit of research.

**MICROBIOLOGY CURRICULUM:** The field of microbiology is too vast in scope to permit specialization during undergraduate study. Accordingly, the curriculum outlined below includes the basic courses in microbiology and allied fields.

The course in Advanced General Microbiology (Microb. 5) is required for all microbiology majors, and should follow General Microbiology (Microb. 1). Microb. 5 is not required as a prerequisite for upper division courses for majors in other departments provided the student has been introduced to certain aspects of microbiology or their equivalent, pertinent to their specialty. Microb. 1, however, is required.

A student planning a major in microbiology should consult his adviser during the first year. The supporting courses should be chosen only from the biological or physical sciences.

A grade of "D" in a course in microbiology will not be counted toward completing the major requirements for graduation.

Courses required in major and supporting courses:—Microb. 1—General Microbiology (4); Microb. 5—Advanced General Microbiology (4); Microb. 101—Pathogenic Microbiology (4); Microb. 131—Food and Sanitary Microbiology (4); Microb. 60, 62—Microbiological Literature (1, 1); Microb. 103—Serology (4); Microb. 161—Systematic Bacteriology (2); Microb. 150—Microbial Physiology (2); Chem. 1, 3—General Chemistry (4, 4); Chem. 31, 32, 33, 34—Elements of Organic Chemistry (3, 3); Chem. 19—Elements of Quantitative Analysis (4); Chem. 161, 163—Biochemistry (2, 2); Math. 10, 11—Algebra, Trigonometry and Analytic Geometry (3, 3); Phys. 10, 11—Fundamentals of Physics (4, 4).

**MEDICAL TECHNOLOGY PROGRAM:** This is a professional program intended for those students who wish to prepare for technical work in any type of a medical laboratory. Because of its technical nature, it is broader in requirements and allows fewer electives. By proper planning of one's schedule beginning in the sophomore year, courses in zoology may be taken in place of electives or certain courses in microbiology. These courses should include Zool. 1 and 2—General Zoology; Zool. 108—Animal Histology; Zool. 110—Parasitology; and the following courses in microbiology: Microb. 105—Clinical Methods, and Microb. 108—Epidemiology.

The student who elects this program should try to obtain summer employment in a medical laboratory. This program is so designed that a student, with proper planning, can prepare himself for admission to any of the training schools for medical technology located in various hospitals. These training schools require two, three or four years of collegiate work, and after one year of hospital apprenticeship, the student is eligible to take examinations for the Registry of Medical Technologists of the American Society of Clinical Pathologists (M.T.) if he so desires.

### *Psychology*

The Department of Psychology is classed in both the Division of Biological Sciences and the Division of Social Sciences, and offers educational programs to both these fields. Further details on the undergraduate program in psychology are given elsewhere in these pages.

Departmental requirements toward the B.S. degree with a major in psychology are Psych. 1, 106, 145, 150, and Psych. 136 or 148, and Psych. 180 or 181, plus 9 additional hours in psychology and/or other departments selected in conference with the student's major adviser. A candidate for the B.S. degree with a major in psychology will offer as supporting courses at least 18 hours from among the following groups: Math. 10, 11, 18, 19, 20, 21, 130, 132; Phys. 10, 11, 60, 104, 105, 109; Zool. 1, 2, 5, 14, 15, 102, 104. The additional 12 hours that are required by the College of Arts and Sciences may be selected from this group. The departmental requirements for the Bachelor of Arts degree are given elsewhere in these pages. No student who

has ever received a second grade lower than "C" in the major requirements listed above will be certified for graduation with a major in psychology.

### *Zoology*

Two courses of study have been established as described below. At least thirty-two hours of zoology, with an average grade of "C", are required for a major in the Department. Zool. 14, 15, 55S and 181 will not be counted as part of the 32 hour major requirement.

**ZOOLOGY:** Copies of the suggested curricula for majors in zoology who are interested in any phase of animal study, pre-medical training, and pre-dental training are available from advisers and from the zoology office.

Courses required for all majors in zoology are: Zool. 1, 2—General Zoology and the Animal Phyla (4, 4); Zool. 5—Comparative Vertebrate Morphology (4); and Zool. 20—Vertebrate Embryology (4).

Supporting courses must include the following: Math. 10, 11—Algebra, Trigonometry and Analytic Geometry (3, 3) or Math. 18, 19—Elementary Mathematical Analysis (5, 5); Phys. 10, 11—Fundamentals of Physics (4, 4); Chem. 1, 3—General Chemistry (4, 4); Organic Chemistry—Chem. 31, 32, 33, 34 (6) or Chem. 35, 36, 37, 38 (8); and one of the following courses: Bot. 2—second semester of General Botany (4); Chem. 19—Elements of Quantitative Analysis (4); or Math. 20, 21—Calculus (4, 4).

**FISHERIES:** The aquatic resources of Maryland offer an excellent opportunity for the study of fisheries and marine zoology. In addition to the courses specified for other majors in zoology, students interested in following the fisheries curriculum must take: Zool. 127—Ichthyology (4); and Zool. 130—Hydrobiology (4).

Supporting courses must include, in addition to those specified above, the following: Chem. 15—Qualitative Analysis (4); Chem. 19—Elements of Quantitative Analysis (4); German 1, 2—Elementary German (3, 3); German 6, 7—Intermediate Scientific German (3, 3).

The student in this curriculum is also required to spend part of his summers in practical work in fisheries.

## V. THE PHYSICAL SCIENCES

### *General Physical Sciences*

This program has been prepared for the student who desires an introduction to the physical sciences but whose interest has not yet centered in any one field of the physical sciences. The program includes some advanced work in chemistry, mathematics, and physics, and permits the student to emphasize

one of these fields without having to meet the full requirements for a major in one specific field. The program is suitable for the pre-medical or pre-dental student who plans to complete the requirements for the B.S. degree before entering medical or dental school. This program is also suitable for the woman student who is interested in science and wishes to become a technical assistant or technical writer in one of these fields, but who does not plan to do graduate work. The program is not recommended for students who may later do graduate work in mathematics or in one of the physical sciences.

The student following this program must meet the general requirements for a degree in the College of Arts and Sciences. He should select French or German to meet the foreign language requirement and Speech 7 (or Speech 1, 2) to fulfill the requirement in speech.

Required introductory courses in mathematics and the physical sciences: Math. 18, 19; Chem. 1, 3; Phys. 10, 11 (or 20, 21). These courses must be passed with an average grade of at least "C" for the student to be eligible to continue with this program.

Required supporting courses for pre-medical or pre-dental students: The pre-dental student must include Zool. 1, 2 in his program and must include Chem. 35, 36, 37, 38 in his advanced work in this program. The pre-medical student must include Zool. 1, 2, 5, 20 in his program and must include Chem. 19, 35, 36, 37, 38 in his advanced work in this program. Students interested in technical writing should take Eng. 7, in addition to the courses in English required of all students.

Advanced courses in mathematics and the physical sciences: The student must complete at least 36 semester hours of advanced work selected from the Departments of Chemistry, Mathematics, and Physics. Of these credits at least 18 must be at the 100 level and taken in at least two of the three departments with no less than 3 in the second department. The student should normally take calculus (Math. 20, 21) inasmuch as practically all the advanced work in mathematics and physics requires calculus.

## Chemistry

The science of chemistry is so broad that completion of a well-planned course of undergraduate study is necessary before specialization. The curriculum outlined below describes such a course of study. The sequence of courses given should be followed as closely as possible; it is realized, however, that some deviation from this sequence may be necessary toward the end of the program. All of the courses in chemistry listed, unless otherwise designated, are required of students majoring in chemistry.

FIRST YEAR: Chem. 1, 3—General Chemistry (4, 4); Math. 18, 19—Elementary Mathematical Analysis (5, 5); Sp. 7—Public Speaking (2). SECOND YEAR: Chem. 15—Qualitative Analysis (4); Chem. 21—Quantitative Analysis



## *Physical Sciences Curriculums*

(4); Chem. 35, 37—Elementary Organic Chemistry (2, 2); Chem. 36, 38—Elementary Organic Laboratory (2, 2); Math. 20, 21—Calculus (4, 4); German 1, 2—Elementary German (3, 3). **THIRD YEAR:** Chem. 123—Quantitative Analysis (4); Chem. 141, 143—Advanced Organic Chemistry (2, 2); Chem. 144—Advanced Organic Laboratory (2); Phys. 20, 21—General Physics (5, 5); German 6, 7—Intermediate Scientific German (3, 3); Electives (1-2, 2-3). **FOURTH YEAR:** Chem. 101—Advanced Inorganic Chemistry (2); Chem. 187, 189—Physical Chemistry (3, 3); Chem. 188, 190—Physical Chemistry Laboratory (2, 2); Chem. 146—The Identification of Organic Compounds (2); Electives (5-8, 5-8); (Eng. 7 is strongly recommended.)

## *Mathematics*

This curriculum offers training in the fundamentals of mathematics in preparation for teaching, industrial work, or graduate work in mathematics.

No grade of "D" in the major field will be counted toward completion of the requirements for graduation in the mathematics curriculum. An average grade of "C" is required in the supporting courses.

The mathematics curriculum offers two options depending on the choice of electives in the junior and senior years.

**PURE MATHEMATICS OPTION:** Electives in mathematics must include three hours in each of the fields of algebra and geometry.

**APPLIED MATHEMATICS OPTION:** Electives in mathematics must include six hours in the fields of algebra and geometry, and at least six hours in the field of applied mathematics. Supporting courses will be selected from the physical sciences or engineering in consultation with the Head of the Department of Mathematics.

**COURSES REQUIRED IN MAJOR:** Math. 18, 19—Elementary Mathematical Analysis (5, 5); Math. 20, 21—Calculus (4, 4); Math. 110, 111—Advanced Calculus (3, 3); Math. 114—Differential Equations (3); and not less than 15 credit hours of electives in mathematics. Supporting courses include Phys. 20, 21—General Physics (5, 5) and an approved program of at least 12 additional hours outside the Department, including at least 6 hours at the 100 level; these courses may be in the physical sciences or in another area chosen by the student. The foreign language requirement should be satisfied by either German or French.

## *Physics*

The physics curriculum is designed for students who desire training in the fundamentals of physics in preparation for graduate work or teaching, or for positions in governmental and industrial laboratories. Students who enter the University intending to major in physics are urged to take during the first two



years the introductory courses Phys. 15, 16, 17, 18, and two semesters of Phys. 60. However, students who enter physics after taking one of the other elementary physics courses (either Phys. 10, 11 or Phys. 20, 21) can reach approximately the same level by taking Phys. 50, 51, Phys. 102, and two semesters of Phys. 60. All students should accompany these basic courses with Math. 18, 19—Elementary Mathematical Analysis (5, 5); and Math. 20, 21—Calculus (4, 4).

After completion of the courses mentioned above, the following courses are specifically required as a part of the physics major: Phys. 52—Heat (3); Phys. 104, 105—Electricity and Magnetism (3, 3); Phys. 118—Introduction to Modern Physics (3); Phys. 119—Modern Physics (3); and at least four credits of advanced laboratory courses (e.g., Phys. 100, 110, 140, 141, 150, or 190). Supporting courses must include at least one additional three credit mathematics course approved by the physics adviser.

Students who wish to be recommended for graduate work in physics must maintain a "B" average and should also include as many as possible of the following courses: Phys. 106—Theoretical Mechanics (3); Phys. 116—Fundamental Hydrodynamics (3); Phys. 120—Nuclear Physics (4); Phys. 122—Properties of Matter (4); Phys. 140, 141—Atomic and Nuclear Physics Laboratory (3, 3); and Math. 110, 111—Advanced Calculus (3). Recommended course programs are available from the Physics Department. Students may major in physics only if a grade of "C" is attained in each semester of the elementary physics courses and in each of the required mathematics courses.

#### HONORS IN PHYSICS

Any students who complete Math. 21 and at least 12 credits in physics by the end of the sophomore year and who have maintained a 3.0 cumulative average in the total academic program as well as in physics and in mathematics may apply for admission to the Independent Studies Program in physics. This program involves some independent work in addition to the normal physics major program and also requires the completion of the comprehensive examination in physics during the second semester of the senior year. Candidates for departmental honors in physics are selected from participants in the Independent Studies Program. For further details, interested physics majors should consult their advisers.

## VI. PRE-PROFESSIONAL CURRICULUMS

#### COMBINED PROGRAM IN ARTS AND SCIENCES AND LAW

Some law schools will consider only those applicants who have completed a four-year college program leading to the A.B. or B.S. degree. Other law schools, including the School of Law of the University of Maryland, will accept applicants who have successfully completed a three-year program of academic work. Law schools do not prescribe the specific courses which the

student should take in his pre-law work, but do require that the student follow one of the standard programs offered by the undergraduate college.

**FOUR-YEAR PROGRAM:** The student who plans to complete the requirements for the A.B. or B.S. degree before entering law school should select one of the major fields for concentration. Pre-law students most commonly select one of the following subjects as their major: American civilization, economics, English, government and politics, history, philosophy, psychology, sociology, speech. During his first two years, the pre-law student will normally follow the General A.B. Curriculum described earlier in these pages. During his junior and senior year, the pre-law student will complete the major and minor requirements for the A.B. degree. The requirements in the various major fields are described elsewhere in this catalog.

**THREE-YEAR PROGRAM:** The student who plans to enter law school at the end of his third year should follow the General A.B. Curriculum during his first two years. During his junior year he will complete the requirements for a minor (18 semester hours) in one of the fields of concentration. He will also be able to take some additional courses as electives. His program for the first three years must include all of the basic courses required for a degree from the College of Arts and Sciences and a minor of 18 semester hours as approved by his pre-law adviser. He must earn a total of 92 academic semester hours, exclusive of the credits in air science (men), health (women), and physical education required of all undergraduate students.

**COMBINED DEGREE IN ARTS AND SCIENCES AND LAW:** The student who successfully completes the three-year program (including the minor) described above and who is admitted to the School of Law of the University of Maryland will be eligible for the Bachelor of Arts degree after the successful completion of one year of full-time courses in the School of Law in Baltimore (or the equivalent in semester hours of work in the Evening Division of the School of Law). The completion of a year's work in the Law School constitutes the student's major. The combined program must include at least 120 academic semester hours, exclusive of required work in air science (men), health (women), and physical activities. The student must earn at least a "C" average in all of his work at College Park, and at least a "C" average in 28 semester hours of work in the School of Law. A student who enters the combined program with advanced standing must complete the final 30 academic semester hours of pre-law work in residence in the College of Arts and Sciences. Eligible candidates are recommended for the degree of Bachelor of Arts by the faculty of the College of Arts and Sciences upon the concurrent recommendation of the Dean of the School of Law.

The course of study at the School of Law requires three years of full-time work for completion. Students who successfully complete the program are awarded the degree of Bachelor of Laws.

#### COMBINED PROGRAM IN ARTS AND SCIENCES AND DENTISTRY

Candidates for admission to dental schools should normally plan to take at least a three-year undergraduate program. Although the School of Dentistry of the University of Maryland considers some applications from students with only two years of undergraduate preparation, it requires three years of the great majority of its candidates and expects these candidates to meet the full requirements of the combined degree in Arts and Sciences and Dentistry as described below.

Certain science courses are prescribed for all candidates for dental school: Zool. 1, 2; Chem. 1, 3, 35, 36, 37, 38; Math. 10, 11 (or 18, 19); Phys. 10, 11, or 20, 21). These courses must be included in any pre-dental program. The student who wishes to be a candidate at the end of his second year must complete all of these courses during the first two years. All requirements must be completed by June of the year in which the student expects to enter dental school.

Neither successful completion of a pre-dental program nor of degree requirements guarantees admission to a dental school. All dental schools, including that of the University of Maryland, have their own admission requirements and procedures. Dental schools expect candidates to attain an academic average substantially higher than the minimum average required for graduation from college. Through its pre-dental advisers and its Committee on the Evaluation of Pre-Dental Students this College attempts to assist its applicants with their problems.

**FOUR-YEAR PROGRAM:** The student electing this program should select one of the major fields in which the A.B. or B.S. degree is offered. Pre-dental students following the four-year program most commonly select one of the following subjects as their major field: microbiology, general biological sciences, general physical sciences, psychology, zoology. These programs are described elsewhere in this catalog. However, a student may meet dental school requirements in most of the majors offered in the College of Arts and Sciences, provided that he includes in his program the science courses specifically prescribed by dental schools. The student's pre-dental adviser will assist the student in planning a program which will meet both the dental school requirements and also the requirements for the A.B. or B.S. degree.

**THREE-YEAR PROGRAM:** The student electing to follow this program must complete all the courses specially required by the dental school. He must earn a total of 90 academic semester hours in addition to the credits in air science (men), health (women), and physical activities required of all undergraduate students. He must complete a minor (18 semester hours) as approved by his pre-dental adviser. He must follow very carefully the program as outlined below:

Freshman year: Eng. 1, 2; Zool. 1, 2; Chem. 1, 3; Math. 10, 11; air science (men); Health 2, 4 (women); physical activities.

## *Pre-Professional Curriculum*

Sophomore year: Eng. 3, 4 or 5, 6; Group I Electives; G. & P. 1; Chem. 35, 36, 37, 38, H. 5, 6; foreign language (French or German or Latin); air science (men); physical activities.

Note: Students planning to apply for admission to dental school at the end of the second year must take Phys. 10, 11, in place of H. 5, 6. The student who takes the two-year program will not be eligible for the Bachelor of Science degree.

Junior year: Phys. 10, 11; foreign languages (continued); Speech 7; minor courses as approved by a pre-dental adviser; electives.

Any student who begins the three-year program may change to a four-year program by making a choice of a major field and adjusting his program accordingly. However, the student is warned that some courses necessary in certain majors must be taken in the sophomore year in order for the student to be eligible for the more advanced courses in that field given in the junior and senior year.

**COMBINED DEGREE IN ARTS AND SCIENCES AND DENTISTRY:** The student who successfully completes the three-year program (including the minor) described above and who is admitted to the School of Dentistry of the University of Maryland will be eligible for the Bachelor of Science degree after successful completion of the first year in the School of Dentistry. The completion of a year's work in the School of Dentistry constitutes the student's major. The combined program must include at least 120 academic semester hours, exclusive of required work in air science (men), health (women), and physical activities. The qualitative grade requirements of the College of Arts and Sciences and of the University must also be fulfilled. A student who enters the combined program with advanced standing must complete the final 30 semester hours of pre-dental work in residence in the College of Arts and Sciences. Eligible candidates are recommended for the degree of Bachelor of Science by the faculty of the College of Arts and Sciences upon the concurrent recommendation of the Dean of the School of Dentistry.

The course of study at the School of Dentistry requires four years for completion. Students who successfully complete the program are awarded the degree of Doctor of Dental Surgery.

### **COMBINED PROGRAM IN ARTS AND SCIENCES AND MEDICINE**

The student planning to request admission to a medical school must pursue a course of study which meets the requirements prescribed by the Council of Medical Education of the American Medical Association and those added or recommended by the particular medical school of his choice.

Some medical schools will consider only those applicants who will have completed a four-year college program and will have earned the A.B. or B.S.



degree at the time of entrance into medical school. Other medical schools will consider applicants who will have completed three years of college work. The School of Medicine of the University of Maryland accepts some candidates who will have completed only three years of college work but looks with more favor upon the four-year program for most students. Both the four-year program and the three-year program are described below. In both programs all required science courses must be completed by June of the year in which the student expects to enter medical school.

Neither successful completion of a pre-medical program nor of degree requirements guarantees admission to any medical school. All medical schools, including that of the University of Maryland, have their own admission requirements and procedures. Medical schools expect candidates to have attained an academic average substantially higher than the minimum average required for graduation from college. Through its Committee on the Evaluation of Pre-Medical Students this College attempts to assist its applicants with their problems.

**FOUR-YEAR PROGRAM:** The student electing this program should select one of the major fields in which the A.B. or B.S. degree is offered. In addition to meeting all general degree requirements and the specific requirements of the major selected, the pre-medical student must include in his program the following required pre-medical courses: Zool. 1, 2, 5, 20; Chem. 1, 3, 19, 35, 36, 37, 38; Math. 10, 11 (or 18, 19); Phys. 10, 11 (or 20, 21).

Pre-medical students, following the four-year program, most commonly select one of the following subjects as their major field: microbiology, general physical sciences, psychology, zoology. These programs are described elsewhere in this catalog. However, a student may meet medical school requirements in most of the majors offered in the College of Arts and Sciences, provided that he includes in his program the individual courses specifically prescribed by medical schools. The student's pre-medical adviser will assist the student in planning a program which will meet both the medical school requirements and also the requirements for the A.B. or B.S. degree.

**THREE-YEAR PROGRAM:** The student electing to follow this program must complete all of the courses specifically required by the medical school. He must earn a total of 90 academic semester hours in addition to the credits in air science (men), health (women), and physical activities required of all undergraduate students. He must follow very carefully the program as outlined in the following paragraphs.

Freshman year: Eng. 1, 2; G. & P. 1; Group I Elective; Math. 10, 11; Chem. 1, 3; Zool. 1, 2; air science (men), health 2, 4 (women); physical activities.

Sophomore year: Eng. 3, 4 or 5, 6; Chem. 35, 36, 37, 38; Zool. 5, 20; foreign language (French or German or Latin); air science (men); physical activities.



Junior year; H. 5, 6; foreign language (continued); Chem. 19, Phys. 10, 11; Sp. 7; Psych. 1; minor courses as approved by the pre-medical adviser.

Any student who begins the three-year program may change to the four-year program by making a choice of a major field and adjusting his program accordingly. However, the student is warned that some courses necessary in certain majors must be taken in the sophomore year in order for the student to be eligible for the more advanced courses in that field given in the junior and senior years. The majority of students would therefore be wise to plan a four-year program on entrance and not attempt the highly concentrated three-year program.

**COMBINED DEGREE IN ARTS AND SCIENCES AND MEDICINE:** The student who successfully completes the three-year program (including the minor) described above and who is admitted to the School of Medicine of the University of Maryland will be eligible for the Bachelor of Science degree after successful completion of the first year in the School of Medicine. The completion of a year's work in the School of Medicine constitutes the student's major. The combined program must include at least 120 academic semester hours, exclusive of the required work in air science (men), health (women), and physical activities. The qualitative grade requirements of the College of Arts and Sciences and of the University must also be fulfilled. A student who enters the combined program with advanced standing must complete the final 30 semester hours of pre-medical work in residence in the College of Arts and Sciences. Eligible candidates are recommended for the degree of Bachelor of Science by the faculty of the College of Arts and Sciences upon the concurrent recommendation of the Dean of the School of Medicine.

The course of study at the School of Medicine requires four years for completion. Students who successfully complete the program are awarded the degree of Doctor of Medicine.

## COURSE OFFERINGS

### AMERICAN CIVILIZATION

*Committee on American Civilization:* ASSISTANT PROFESSOR BEALL, *Executive Secretary.*

*Professors:* LAND, HOFFSOMMER, MURPHY AND PLISCHKE.

*Amer. Civ. 137, 138. Conference Course in American Civilization. (3, 3)*

First and second semesters. Four American classics (drawn from fields of the Departments of English, Government and Politics, History, and Sociology, which cooperate in the program) are studied each semester. Specialists from the appropriate departments lecture on these books. For the first semester of this academic year the classics are: Franklin's *Autobiography*, *The Life and Writings of Thomas Jefferson*, De Tocqueville's *Democracy in America*, and Schlesinger's *The Age of Jackson*; for the second semester, Thoreau's *Walden*, Howells' *Rise of Silas Lapham*, Veblen's *Theory of the Leisure Class*, and Warner's *Democracy in Jonesville*. Through these books and the lectures on them, the student's acquaintance with American culture is brought to a focus.

This course is required for seniors majoring in the American Civilization Program. The course also counts as major credit in any of the four cooperating departments; a student may take either or both semesters.

The student majoring in American civilization can obtain his other courses principally from the offerings of the Departments of English, History, Government and Politics, and Sociology. (Bode, Beall and cooperating specialists.)

### For Graduates

*Amer. Civ. 201, 202. Seminar in American Civilization. (3, 3)*

First and second semesters.

## ART

*Professor and Head:* WHARTON.

*Associate Professors:* SIEGLER, LEMBACH AND MARIL.

*Assistant Professors:* GRUBAR AND STITES.

*Instructors:* JAMIESON AND FREENY.

*Art. 1. Basic Drawing (Charcoal). (3)*

Three two-hour laboratory periods per week. Drawing from casts, preparatory to life and portrait drawing and painting. Stress is placed on fundamental principles, such as the study of relative proportions, values, and modeling, etc. (Siegler, Jamieson.)

*Art 2. Basic Drawing (Charcoal). (3)*

Three two-hour laboratory periods per week. Drawing from model, (head and figure) with emphasis on structure and movement. (Siegler, Jamieson.)

*Art 3. Rendering. (2)*

Two two-hour laboratory periods per week. Methods of rendering architectural, interior, and landscape architectural drawings. Included are: techniques of monotone wash and water color. (Stites.)

*Art 5. Basic Design. (3)*

One lecture hour and five laboratory hours per week. A basic course in design for beginners consisting of the theory and practice of design. Theory of design deals with design elements such as line, shape, form, etc., and design principles such as contrast, balance, rhythm, etc. Design practice consists of working with pencil, pen, water color, casein, and other painting media in terms of organization, representation and space. (Freeny.)

*Art 6. Still Life. (3)*

One lecture hour and five laboratory hours per week. Prerequisite, Art 5. A continuation of Art 5 with emphasis on more advanced still life painting problems with different media. (Jamieson.)

*Art 7, 8. Landscape Painting. (3, 3)*

Three two-hour laboratory periods per week. Drawing and painting; organization of landscape material with emphasis on compositional structure. (Maril.)

*Art 9. History of Art. (3)*

A survey of the cultures from prehistoric times to the Renaissance, as expressed through painting, sculpture, and architecture. (Grubar, Stites.)

*Art 10. History of American Art. (1)*

A resume of the development of painting, sculpture and architecture in this country. (Grubar.)

*Art 11. History of Art. (3)*

Designed to continue the survey begun in Art 9. The course is concerned with the development of painting, sculpture, and architecture from the Renaissance to the present day. (Grubar, Stites.)

*Art 13, 14. Elementary Sculpture. (2, 2)*

Two two-hour laboratory periods per week. Study of three-dimensional compositions in round and bas-relief. Mediums used: clay, plasteline, plaster, wood, stone. (Maril.)

*Art 15. Fundamentals of Art. (3)*

Two three hour laboratory periods per week. This course emphasizes the fundamental principles of the creative, visual arts for those wishing to teach. It includes elements and principles of design, perspective, and theory of color. Studio practice is given in the use and application of different media. (Lembach.)

*Art 20. Art Appreciation. (2)*

An introduction to the technical and aesthetic problems of the artist. The student becomes acquainted with the elements that go into a work of the visual arts. He is made aware of the underlying structure that results in the "wholeness" of an art work. He will see examples (original and reproductions) of masterpieces of art. (Lembach.)

*Art 22. History of American Art. (3)*

This course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. The development of painting, sculpture and architecture in America from the colonial period to the present. (Grubar, Stites.)

*Art 100. Art Appreciation. (2)*

This course enables students to develop a basis for understanding works of art. It investigates the forms and backgrounds of painting, sculpture and architecture.

(Grubar.)

*Art 102, 103. Creative Painting. (3, 3)*

Three two-hour laboratory periods per week. Prerequisites, Art 1, 5, and 7. Assignments of pictorial composition aimed at both mural decoration and easel picture problems. The formal values in painting are integrated with the student's own desire for personal expression.

(Maril.)

*Art 104, 105. Life Class (Drawing and Painting, Intermediate). (3, 3)*

Three two-hour laboratory periods per week. Prerequisites, Art 1 and 5. Careful observation and study of the human figure for construction, action, form, line, and color.

(Siegler.)

*Art 106, 107. Portrait Class (Drawing and Painting). (3, 3)*

One lecture hour and five laboratory hours per week. Prerequisites, Art 1 and 5. Thorough draftmanship and study of characterization and design stressed.

(Wharton.)

*Art 108, 109. Modern Art. (3, 3)*

A survey of the developments in various schools of modern art. Works of art analyzed according to their intrinsic values and in their historical background. Collections of Washington and Baltimore are utilized.

(Grubar.)

*Art 113, 114. Illustration. (3, 3)*

Two three-hour laboratory periods per week. Prerequisites, Art 1, 5, 104. This course is designed for the purpose of channeling fine art training into practical fields, thereby preparing the student to meet the modern commercial advertising problems. Special emphasis will be placed upon magazine and book illustrating.

(Jamieson.)

*Art 115, 116. Still Life Painting (Advanced). (3, 3)*

Two three-hour laboratory periods per week. Prerequisite, Art 6. This course is for those who have completed Art 6 and wish to specialize in Still Life Painting, and more creative work.

(Wharton.)

*Art 154, 155. Life Drawing and Painting (Advanced). (3, 3)*

Three two-hour laboratory periods per week. Prerequisite, Art 105. This course is for those who have completed Art 105 and wish to develop greater proficiency in the use of the figure in creative work.

(Jamieson.)

*Art 156, 157. Portrait Painting (Advanced). (3, 3)*

Two three-hour laboratory periods per week. Prerequisite, Art 106, 107. This course is for those who have completed Art 106, 107 and wish to specialize in portraiture.

(Wharton.)

*Art 185, 186. Renaissance and Baroque Art in Italy. (2, 2)*

Prerequisite, Art 11. The first term is concerned with the emergence and development of Renaissance painting, sculpture, and architecture through the first quarter of the 16th century. In the second term Mannerism and the Baroque phases are studied.

(Grubar, Stites.)

Art 188, 189. *History of 16th and 17th Century Painting.* (2, 2)

Prerequisite, Art 11. A study of the development of painting and related arts. The first semester study will center on Italian painting in the 16th and 17th century and the emergence of the Baroque style. During the second semester, the paintings of France, Spain, England, and the Low Countries will be considered. (Grubar.)

Art 190, 191. *Special Problems in Art.* (2 or 3, 2 or 3)

Two three-hour laboratory periods per week or its equivalent in art history and appreciation. Permission of Department Head. Designed to offer the advanced art student special instruction in areas not offered regularly by the Department. (Staff.)

## BOTANY

Students in the College of Arts and Sciences may select botany as a major field, and may also take courses in this Department for elective credits. For a description of courses, see the catalog of the College of Agriculture.

## CHEMISTRY

Laboratory fees in chemistry are \$10.00 per laboratory course per semester except for Chemistry 214, for which the fee is \$20.00.

*Professor and Acting Head:* WOODS.

*Professors:* LIPPINCOTT, PRATT, REEVE, ROLLINSON, SVIRBELY, VEITCH AND WHITE.

*Research Professor:* BAILEY.

*Associate Professors:* BROWN, JAQUITH, PICKARD, PURDY AND STUNTZ.

*Assistant Professors:* BOYD, CARRUTHERS, GORDON, KASLER AND LAKSHMANN.

### ANALYTICAL CHEMISTRY

Chem. 15. *Qualitative Analysis.* (4)

First semester. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 3. (Jaquith.)

Chem. 19. *Elements of Quantitative Analysis.* (4)

First and second semesters. Summer session. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 3. An introduction to the basic theory and techniques of volumetric and gravimetric analysis. Primarily for students in engineering, agriculture, pre-medical, and pre-dental curricula. (Purdy.)

Chem. 21. *Quantitative Analysis.* (4)

Second semester. Two lectures and two three-hour laboratory periods per week. Prerequisite, Chem. 15. An intensive study of the theory and techniques of inorganic quantitative analysis, covering primarily volumetric methods. Required of all students majoring in chemistry. (Stuntz.)

Chem. 123. *Quantitative Analysis.* (4)

First semester. Two lectures and two three-hour laboratory periods per week. Pre-



requisite, Chem. 21. A continuation of Chem. 21, including volumetric, gravimetric, electrometric, and colorimetric methods. Required of all students majoring in chemistry. (Stuntz.)

*Chem. 125. Instrumental Analysis. (4)*

Second semester. Two lectures and six hours of laboratory per week. Prerequisites, Chem. 189, 190 or concurrent registration therein. A study of the application of physicochemical methods to analytical chemistry. Techniques such as polarography, potentiometry, conductivity and spectrophotometry will be included. (Purdy.)

*Chem. 166, 167. Food Analysis. (3, 3)*

First and second semesters. One lecture and two three-hour laboratory periods per week. Prerequisites, Chem. 33, 34.

*Chem. 206, 208. Spectrographic Analysis. (1, 1)*

One three-hour laboratory period per week. Registration limited. Prerequisites, Chem. 190 and consent of the instructor. (White.)

*Chem. 221, 223. Chemical Microscopy. (2, 2)*

First and second semesters. One lecture and one three-hour laboratory period per week. Registration limited. Prerequisite, consent of instructor. Chem. 221 is a prerequisite for Chem. 223. A study of the use of the microscope in chemistry. Chem. 223 is devoted to study of the optical properties of crystals. (Stuntz.)

*Chem. 225. Advanced Instrumental Analysis. (4)*

Second semester. Two lectures and six hours of laboratory per week. Prerequisites, Chem. 189, 190 or concurrent registration therein. An intensive study of physicochemical methods as applied to analytical chemistry. Laboratory work will include experiments in such fields as polarography, coulometry and amperometry, potentiometry and spectrophotometry, nephelometry. (Purdy.)

*Chem. 226. Advanced Quantitative Analysis. (4)*

First semester. Two lectures and two three-hour laboratory periods per week. Prerequisites, Chem. 125, 225, or consent of instructor. A study of advanced methods with emphasis on the modern techniques of analytical chemistry. (Purdy.)

*Chem. 266. Biological Analysis. (2)*

Second semester. Two three-hour laboratory periods per week. Prerequisites, Chem. 19, 33, 34. A study of analytical methods applied to biological material.

## BIOCHEMISTRY

*Chem. 81. General Biochemistry. (2)*

First semester. Two lectures per week. Prerequisites, Chem. 33, 34, or Chem. 37, 38. This course is designed primarily for students in home economics. Chem. 82 *must* be taken concurrently. (Reeve.)

*Chem. 82. General Biochemistry Laboratory. (2)*

First semester. Two three-hour laboratory periods per week. Prerequisite, Chem. 34 or Chem. 38. A course designed to accompany Chem. 81. (Reeve.)

*Chem. 161, 163. Biochemistry. (2, 2)*

First and second semesters. Two lectures per week. Prerequisite, Chem. 33, or Chem. 37. This course is designed primarily for students in agriculture, bacteriology, or chemistry, and for those students in home economics who need a more extensive course in biochemistry than Chem. 81, 82. (Woods, Veitch.)

*Chem. 162, 164. Biochemistry Laboratory. (2, 2)*

First and second semesters. Two three-hour laboratory periods per week. Prerequisite, Chem. 34, or Chem. 38. (Woods, Veitch.)

*Chem. 261, 263. Advanced Biochemistry. (2, 2)*

First and second semesters. Two lectures per week. Prerequisite, Chem. 143, or consent of instructor. (Veitch.)

*Chem. 262, 264. Advanced Biochemistry Laboratory. (2, 2)*

First and second semesters. Two three-hour laboratory periods per week. Prerequisite, consent of instructor. (Veitch.)

*Chem. 265. Enzymes. (2)*

First semester. Two lectures per week. Prerequisite, Chem. 163. (Veitch.)

*Chem. 268. Special Problems in Biochemistry. (2-4)*

First and second semesters. Two to four three-hour laboratory periods per week. Prerequisites, Chem. 161, 162 and consent of instructor. (Veitch.)

INORGANIC AND GENERAL CHEMISTRY

*Chem. 1, 3. General Chemistry. (4, 4)*

First and second semesters. Chem. 3, Summer session. Two lectures, one quiz, and two two-hour laboratory periods per week. Prerequisite, 1 year high school algebra or equivalent. (Staff.)

*Chem. 11, 13. General Chemistry. (3, 3)*

Two lectures and one three-hour laboratory period per week. An abbreviated course in general chemistry for students in home economics and pre-nursing. This course is open only to students registered in home economics and pre-nursing. (Rollinson.)

*Chem. 101. Advanced Inorganic Chemistry. (2)*

Second semester. Two lectures per week. Prerequisites, Chem. 37, 123.

*Chem. 102. Inorganic Preparations. (2)*

Second semester. Two three-hour laboratory periods per week. Prerequisite, Chem. 123. (Jaquith.)

*Chem. 111. Chemical Principles. (4)*

Two lectures and two three-hour laboratory periods a week. Prerequisite, Chem. 3, or equivalent. Not open to students seeking a major in the physical sciences, since the

course content is covered elsewhere in their curricula. A course in the principles of chemistry with accompanying laboratory work consisting of simple quantitative experiments. (Credit applicable only toward degree in College of Education.) (Jaquith.)

One or more courses of the group 201-214 will be offered each semester depending on demand.

*Chem. 201, 203. The Chemistry of the Rarer Elements. (2, 2)*

First and second semesters. Two lectures per week.

(White.)

*Chem. 202, 204. Advanced Inorganic Laboratory. (2, 2)*

First and second semesters. Two three-hour laboratory periods per week.

*Chem. 205. Radiochemistry. (2)*

Two lectures per week.

(Rollinson.)

*Chem. 207. Chemistry of Coordination Compounds. (2)*

Two lectures per week.

(Rollinson.)

*Chem. 209. Non-Aqueous Inorganic Solvents. (2)*

First or second semester. Two lectures per week.

(Jaquith.)

*Chem. 210. Radiochemistry Laboratory. (1-2)*

One or two four-hour laboratory periods per week. Registration limited. Prerequisites, Chem. 205 (or concurrent registration therein), and consent of instructor. (Rollinson.)

*Chem. 211. Selected Topics in Inorganic Chemistry. (2)*

First or second semester. Two lectures a week. Prerequisite, Chem. 201, 203 or equivalent. An examination of some current topics in modern inorganic chemistry.

(Boyd.)

*Chem. 213. Advanced Radiochemistry. (2)*

Second semester. Two lectures per week. Prerequisite, Chem. 205 or consent of instructor. Utilization of radioisotopes with special emphasis on applications to problems in the life sciences.

(Lakshmanan.)

*Chem. 214. Advanced Radiochemistry Laboratory. (1 or 2)*

Second semester. One or two four-hour laboratory periods per week. Prerequisites, Chem. 210 and Chem. 213 (or concurrent registration in Chem. 213) and consent of instructor. Registration limited. Laboratory training in utilization of radioisotopes with special emphasis on applications to problems in life sciences. (Lakshmanan.)

## ORGANIC CHEMISTRY

*Chem. 31, 33. Elements of Organic Chemistry. (2, 2)*

First and second semesters. Two lectures per week. Prerequisite, Chem. 3. Organic chemistry for students in agriculture, bacteriology, and home economics. (Staff.)

*Chem. 32, 34. Elements of Organic Laboratory. (1, 1)*

First and second semesters. One three-hour laboratory period per week. Prerequisites, Chem. 31, 33, or concurrent registration therein. (Staff.)

## Chemistry

### *Chem. 35, 37. Elementary Organic Chemistry. (2, 2)*

First and second semesters. Chem. 37, Summer session. Two lectures per week. Prerequisite, Chem. 3. A course for chemists, chemical engineers, pre-medical students, and pre-dental students. (Woods.)

### *Chem. 36, 38. Elementary Organic Laboratory. (2, 2)*

First and second semesters. Chem. 38, Summer session. Two three-hour laboratory periods per week. Prerequisites, Chem. 35, 37, or concurrent registration therein. (Woods.)

### *Chem. 115. A Survey of Organic Chemistry. (4)*

Summer school only. Open ONLY to registrants in the National Science Foundation Summer Institute. Five one-hour lectures per week; five three-hour laboratory periods per week. A systematic survey of compounds of carbon at the elementary level.

### *Chem. 141, 143. Advanced Organic Chemistry. (2, 2)*

First and second semesters. Two lectures per week. Prerequisites, Chem. 37, 38. An advanced study of the compounds of carbon. (Reeve.)

### *Chem. 144. Advanced Organic Laboratory. (2-4)*

First and second semesters. Summer session. Two or four three-hour laboratory periods per week. Prerequisites, Chem. 37, 38. (Pratt.)

### *Chem. 146, 148. The Identification of Organic Compounds. (2, 2)*

First and second semesters. Summer session. Two three-hour laboratory periods per week. Prerequisites, Chem. 141, 143, or concurrent registration therein. The systematic identification of organic compounds. (Pratt.)

### *Chem. 150. Organic Quantitative Analysis. (2)*

First and second semesters. Two three-hour laboratory periods per week. Prerequisite, consent of the instructor. The semi-micro determination of carbon, hydrogen, nitrogen, halogen and certain functional groups. (Kasler.)

One or more courses from the following group, 240-253, will customarily be offered each semester.

### *Chem. 240. Organic Chemistry of High Polymers. (2)*

An advanced course covering the synthesis of monomers, mechanisms of polymerization, and the correlation between structure and properties in high polymers. (Bailey.)

### *Chem. 241. Stereochemistry. (2)*

Two lectures per week. (Woods.)

### *Chem. 245. The Chemistry of the Steroids. (2)*

Two lectures per week. (Pratt.)

### *Chem. 249. Physical Aspects of Organic Chemistry. (2)*

Two lectures per week. (Woods.)

### *Chem. 251. The Heterocyclics. (2)*

Two lectures per week. (Pratt.)

*Chem. 253. Organic Sulfur Compounds. (2)*

Two lectures per week.

*Chem. 254. Advanced Organic Preparations. (2-4)*

First and second semesters. Summer session. Two or four three-hour laboratory periods per week. (Pratt.)

*Chem. 258. The Identification of Organic Compounds, an Advanced Course. (2-4)*

First and second semesters. Summer session. Two to four three-hour laboratory periods per week. Prerequisites, Chem. 141, 143 or concurrent registration therein. (Pratt.)

## PHYSICAL CHEMISTRY

*Chem. 187, 189. Physical Chemistry. (3, 3)*

First and second semesters. Three lectures per week. Prerequisites, Chem. 19 or 21; Phys. 20, 21; Math. 20, 21; or consent of instructor. A course primarily for chemists and chemical engineers. This course must be accompanied by Chem. 188, 190. (Svirbely.)

*Chem. 188, 190. Physical Chemistry Laboratory. (2, 2)*

First and second semesters. Two three-hour laboratory periods per week. A laboratory course for students taking Chem. 187, 189. (Pickard.)

*Chem. 192, 194. Glassblowing Laboratory. (1, 1)*

First and second semesters. Summer session. One three-hour laboratory period per week. Prerequisite, consent of instructor. (Carruthers.)

The common prerequisites for the following courses are Chem. 187 and 189, or their equivalent. One or more courses of the group, 281 through 323, will be offered each semester depending on demand.

*Chem. 281. Theory of Solutions. (2)*

First or second semester. Two lectures per week. Prerequisite, Chem. 307, or equivalent. (Svirbely.)

*Chem. 285. Colloid Chemistry. (2)*

Two lectures per week. (Pickard.)

*Chem. 287. Infra-red and Raman Spectroscopy. (2)*

Two lectures per week. Prerequisite, consent of instructor. (Lippincott.)

*Chem. 295. Heterogeneous Equilibria. (2)*

Two lectures per week. (Pickard.)

*Chem. 299. Reaction Kinetics. (3)*

Three lectures per week. (Svirbely.)

*Chem. 303. Electrochemistry. (3)*

Three lectures per week. (Pickard.)



## *Chemistry, Classical Languages and Literatures*

### *Chem. 304. Electrochemistry Laboratory. (2)*

Two three-hour laboratory periods per week. Prerequisite, consent of instructor.  
(Svirbely.)

### *Chem. 307. Chemical Thermodynamics. (3)*

Three lectures per week. (Pickard.)

### *Chem. 311. Physicochemical Calculations. (2)*

Two lectures per week. (Pickard.)

### *Chem. 313. Molecular Structure. (3)*

Three lectures per week. (Brown.)

### *Chem. 317. Chemical Crystallography. (3)*

Three lectures per week. Prerequisite, consent of instructor. A detailed treatment of single crystal x-ray methods. (Brown.)

### *Chem. 319, 321. Quantum Chemistry. (3, 2)*

Three lectures a week first semester. Two lectures a week second semester.  
(Lippincott, Mason.)

### *Chem. 323. Statistical Mechanics and Chemistry. (3)*

Three lectures per week. Prerequisite, Chem. 307, or equivalent. (Brown.)

## SEMINAR AND RESEARCH

### *Chem. 351. Seminar. (1)*

First and second semesters. (Staff.)

### *Chem. 399. Research.*

First and second semesters. Summer session. (Staff.)

## CLASSICAL LANGUAGES AND LITERATURES

*Professor and Head:* AVERY.

*Assistant Professor:* HUBBE.

No placement tests are given in the Classical Languages. The following schedule will apply in general in determining the course level at which students will register for Latin and Greek. All students whose stage of achievement is not represented below are urgently invited to confer with the Head of the Department.

Students offering 0 or 1 unit of Latin will register for course 1.

Students offering 2 units of Latin will register for course 3.

Students offering 3 units of Latin will register for course 4.

Students offering 4 units of Latin will register for course 5.

No credit will be given for less than two semesters of Elementary Latin or Greek except as provided below in the course description of Latin 1, 2.

## LATIN

### *Latin 1, 2. Elementary Latin. (3, 3)*

First and second semesters. The essentials of Latin grammar, exercises in translation, composition, and connected reading. A student who has had two units of Latin in high school may register for Latin 1 for purposes of review, but not for credit; however, he may, under certain conditions, register for Latin 2 for credit with departmental permission. (Avery.)

### *Latin 3. Intermediate Latin. (3)*

First and second semesters. Prerequisite, Latin 1, 2 or equivalent. Grammar review, Latin readings, and exercises in composition, followed by the reading of selections from *Caesar's Commentaries on the Gallic War*. (Avery.)

### *Latin 4. Intermediate Latin. (3)*

First and second semesters. Prerequisite, Latin 3 or equivalent. Selected orations of Cicero. (Avery.)

### *Latin 5. Vergil's Aeneid. (3)*

First and second semesters. Prerequisite, Latin 4 or equivalent. Selections from Vergil's *Aeneid*. (Hubbe.)

### *Latin 51. Horace. (3)*

Second semester. Prerequisite, Latin 5 or equivalent. Selected *Odes* and *Epodes* of Horace. (Hubbe.)

### *Latin 52. Livy. (3)*

First semester. Prerequisite, Latin 51 or equivalent. Selections from Livy's history. (Avery.)

### *Latin 61. Pliny's Letters. (3)*

Second semester. Prerequisite, Latin 52 or equivalent. Selected letters of Pliny the Younger. (Avery.)

### *Latin 70. Greek and Roman Mythology. (3)*

Second semester. Taught in English, no prerequisite. A systematic study of the divinities of ancient Greece and Rome and the classical myths concerning them. *This course is particularly recommended for students planning to major in Foreign Languages, English, History, the Fine Arts, and Journalism.* (Avery.)

## *For Advanced Undergraduates and Graduates*

Prerequisite for 100 level courses, Latin 61.

### *Latin 101. Catullus and the Roman Elegiac Poets. (3)*

Lectures and readings on Catullus as a writer of lyric, an imitator of the Alexandrians, and as a writer of elegy, and on Tibullus, Propertius, and Ovid as elegists. The reading of selected poems of the four authors. Reports. (Avery.)

### *Latin 102. Tacitus. (3)*

Lectures and readings on Greek and Roman historiography before Tacitus and on the

author as a writer of history. The reading of selections from the *Annals* and *Histories*. Reports. (Avery.)

*Latin 103. Roman Satire. (3)*

Lectures and readings on the origins and development of Roman satire. The reading of selections from the satires of Horace, Petronius' *Cena Trimalchionis*, and the satires of Juvenal. Reports. (Avery.)

*Latin 104. Roman Comedy. (3)*

Lectures and readings on the origins and development of Roman comedy. The reading of selected plays of Plautus and Terence. Reports. (Avery.)

*Latin 105. Lucretius. (3)*

Lectures and readings on Greek and Roman Epicureanism. The reading of selections from the *De rerum natura*. Reports. (Avery.)

*Latin 111. Advanced Latin Grammar. (3)*

Prerequisite, three years of college Latin or equivalent. An intensive study of the morphology and syntax of the Latin language supplemented by rapid reading. (Avery.)

*For Graduates*

*Latin 210. Vulgar Latin Readings. (3)*

Summer session. Prerequisite, consent of instructor. An intensive review of the phonology, morphology, and syntax of Classical Latin, followed by the study of the deviations of Vulgar Latin from the classical norms, with the reading of illustrative texts. The reading of selections from the *Peregrinatio ad loca sancta* and the study of divergences from classical usage therein, with special emphasis on those which anticipate subsequent developments in the Romance Languages. Reports. (Avery.)

GREEK

*Greek 1, 2. Elementary Greek. (3, 3)*

First and second semesters. The essentials of Greek grammar, exercises in translation, composition and connected reading. (Hubbe.)

*Greek 3. Intermediate Greek. (3)*

First semester. Prerequisite, Greek 1, 2 or equivalent. Grammar review, Greek readings, and exercises in composition, followed by the reading of selections from the *Anabasis* of Xenophon. (Hubbe.)

*Greek 4. Intermediate Greek. (3)*

Second semester. Prerequisite, Greek 3 or equivalent. Selections from the Homeric epics. See Greek 6. (Hubbe.)

*Greek 5. Herodotus. (3)*

First semester. Prerequisite, Greek 4 or equivalent. Selections from Herodotus' history of the Persian Wars. (Hubbe.)

*Greek 6. The New Testament. (3)*

Second semester. Prerequisite, Greek 3 or equivalent. Greek 6 will be substituted

for Greek 4 upon demand of a sufficient number of students. The study of New Testament Greek and its deviations from Classical Greek. The reading of selections from the four Gospels. (Hubbe.)

*Greek 51. Euripides. (3)*

Second semester. Prerequisite, Greek 5 or equivalent. Selected plays of Euripides. (Hubbe.)

*Greek 52. Plato. (3)*

First semester. Prerequisite, Greek 51 or equivalent. Selected dialogues of Plato. (Avery.)

## COMPARATIVE LITERATURE

*Professors:* ALDRIDGE, FALLS, GOODWYN, HARMAN, MC MANAWAY (P.T.), MURPHY, PRAHL, ZEEVELD AND ZUCKER.

*Associate Professors:* COOLEY, GRAVELY, MANNING, PARSONS AND WEBER.

*Assistant Professor:* ANDREWS.

Requirements for major include Comparative Literature 101, 102. Comparative literature courses may be counted toward a major or minor in English when recommended by the student's major adviser.

*Comp. Lit. 1. Greek Poetry. (2)*

First semester. Homer's *Iliad* and *Odyssey*, with special emphasis on the literary form and the historical and mythological background.

*Comp. Lit. 2. Later European Epic Poetry. (2)*

Second semester. Virgil's *Aeneid*, Dante's *Divine Comedy*, *Nibelungenlied* and other European epics, with special emphasis on their relationship to and comparison with the Greek epic.

### *For Advanced Undergraduates and Graduates*

*Comp. Lit. 101, 102. Introductory Survey of Comparative Literature. (3, 3)*

First semester. Survey of the background of Europe's literature through study of Greek and Latin literature in English translations, discussing the debt of modern literature to the ancients. Second semester: Study of medieval and modern continental literature. (Zucker.)

*Comp. Lit. 103. The Old Testament as Literature. (3)*

Second semester. A study of the sources, development and literary types. (Zucker.)

*Comp. Lit. 105. Romanticism in France. (3)*

First semester. Lectures and readings in the French romantic writers from Rousseau to Baudelaire. Texts are read in English translations. (Parsonş.)

*Comp. Lit. 106. Romanticism in Germany. (3)*

Second semester. Continuation of Comp. Lit. 105. German literature from Buerger to Heine in English translations. (PrahI.)

## *Classical Languages and Literatures*

*Comp. Lit. 107. The Faust Legend in English and German Literature. (3)*  
First semester. A study of the Faust legend of the Middle Ages and its later treatment by Marlowe in *Dr. Faustus* and by Goethe in *Faust*. (Prahl.)

*Comp. Lit. 112. Ibsen. (3)*

First semester. A study of the life and chief work of Henrik Ibsen with special emphasis on his influence on the modern drama. (Zucker.)

*Comp. Lit. 114. The Greek Drama. (3)*

First semester. The chief works of Aeschylus, Sophocles, Euripides, and Aristophanes in English translations. Emphasis on the historic background, on dramatic structure, and on the effect of the Attic drama upon the mind of the civilized world. (Prahl.)

*Comp. Lit. 125. Literature of the Middle Ages. (3)*

Narrative, dramatic, and lyric literature of the Middle Ages studied in translation. (Cooley.)

In addition, the following courses will count as credit in comparative literature.

## *Classical Languages and Literatures*

Latin 70.

## *English Language and Literature*

Eng. 104; Eng. 113; Eng. 121; Eng. 129, 130; Eng. 144; Eng. 145; Eng. 155, 156; Eng. 157.

## *Foreign Language and Literatures*

Spanish 109.

## *Speech and Dramatic Art*

Sp. 131, 132.

## *For Graduates*

*Comp. Lit. 258. Folklore in Literature. (3)*

A study of folk heroes, motifs, and ideas as they appear in the world's masterpieces. (Goodwyn.)

*Comp. Lit. 301. Seminar in Themes and Types. (3)*

Second semester. Prerequisite, one year's work in literature and the knowledge of one language other than English. Intensive study of fundamental motifs and trends in western literature. (Aldridge.)

The following courses will count as credit in comparative literature:

## *English Language and Literature*

Eng. 201; Eng. 204; Eng. 206, 207; Eng. 216, 217; Eng. 227, 228.

## *Foreign Languages and Literatures*

German 204.



## ECONOMICS

Students in the College of Arts and Sciences may select economics as a major field, and may also take courses in this department for elective credit. For a description of courses, see the catalog of the College of Business and Public Administration.

## ENGLISH LANGUAGE AND LITERATURE

*Professor and Head:* MURPHY.

*Professors:* ALDRIDGE, BODE, HARMAN, MC MANAWAY (P.T.) AND ZEEVELD.

*Associate Professors:* BALL, COOLEY, GRAVELY, MANNING, WARD AND WEBER.

*Assistant Professors:* ANDREWS, BARNES, BEALL, BROWN, COULTER, FLEMING, LUTWACK, MARTIN, MISH, PORTZ, SCHAUMANN, SMITH, THORBERG AND WALKER.

*Instructors:* BECKMAN, BROWNE, BUTTS, CLENDENIN, COOPER, COWEN (P.T.), DEMAREE, DUNN, HALLER, HAN (P.T.), HARE, HERMAN, JELLEMA, KENNY (P.T.), KEVER (P.T.), MYERS (P.T.), NELSON, RICE, ROGERS, RYAN, STAHR, STEVENSON, STONE, THOMAS (P.T.), WALT, WEAVER AND WHITNEY.

*Graduate Assistants:* ADAMS, CHAMBERS, COHEN, COVINGTON, ELLEFSON, GELLIS, COCHBERG, GOLDBERG, GOLDINGER, HEEMANN, HUSFELT, KELLOGG, LETZRING, MAGAW, MERKEL, MERTZ, MONCADA, MOREINES, PECK, SCHAP, SCHNITZER, SEIGEL AND WHALEY.

### *Eng. 1, 2. Composition and American Literature. (3, 3)*

First and second semesters. Summer session. Required of freshmen. Eng. 1 is the prerequisite of Eng. 2. See Eng. 21. Grammar, rhetoric, and the mechanics of writing; frequent themes. Readings are in American literature. (Barnes, Staff.)

### *Eng. 3, 4. Composition and World Literature. (3, 3)*

First and second semesters. Summer session. Prerequisite, Eng. 2 or 21. Eng. 3, 4, or Eng. 5, 6, or an acceptable combination of the two, are required of sophomores. Credit will not be given for more than six hours of work in 3, 4 and 5, 6. Practice in composition. An introduction to world literature, foreign classics being read in translation. (Cooley, Staff.)

### *Eng. 5, 6. Composition and English Literature. (3, 3)*

First and second semesters. Prerequisite, Eng. 2 or 21. Eng. 3, 4, or Eng. 5, 6, or an acceptable combination of the two, are required of sophomores. Credit will not be given for more than six hours of work in 3, 4 and 5, 6. Practice in composition. An introduction to major English writers. (Cooley, Staff.)

### *Eng. 7. Technical Writing. (2)*

Second semester. Prerequisite, Eng. 2 or 21. For students desiring practice in writing reports, technical essays, or popular essays on technical subjects. (Coulter, Walt.)

### *Eng. 8. College Grammar. (3)*

First and second semesters. Prerequisite, Eng. 2 or 21. An analytical study of modern English grammar. (Harman.)

*Eng. 9. Introduction to Narrative Literature. (3)*

Second semester. Prerequisite, Eng. 2 or 21. An intensive study of representative stories, with lectures on the history and technique of the short story and other narrative forms. (Harman.)

*Eng. 12. Introduction to Creative Writing. (2)*

Second semester. Prerequisite, Eng. 2 or 21. (Portz, Rice.)

*Eng. 14. Expository Writing. (3)*

Not offered on College Park campus. Prerequisite, Eng. 2 or 21. Credit will not be given for Eng. 7 in addition to Eng. 14. Methods and problems of exposition; practice in several kinds of informative writing including the preparation of technical papers and reports.

*Eng. 15. Readings in Biography. (3)*

First semester. Prerequisite, Eng. 2 or 21. An analytical study in the form and technique of biographical writing in Europe and America. (Ward.)

*Eng. 21. Advanced Freshman Composition and Literature. (3)*

First and second semesters. Replaces the Eng. 1 and 2 requirement for students exempt from Eng. 1. Includes a survey of fundamentals covered in Eng. 1 in addition to material comparable to that of Eng. 2. (Thorberg, Staff.)

*For Advanced Undergraduates and Graduates*

Eng. 4 or 6 and junior standing are prerequisite to courses numbered 101 to 199.

*Eng. 101. History of the English Language. (3)*

Second semester. (Harman.)

*Eng. 102. Old English. (3)*

First semester. (Ball.)

*Eng. 103. Beowulf. (3)*

Second semester. (Ball.)

*Eng. 104. Chaucer. (3)*

First semester. The Canterbury Tales, Troilus and Criseyde, and the principal minor poems. (Harman.)

*Eng. 107. American English. (3)*

Second semester. The English language as developed in the United States. Dialects, vocabulary, past and present problems of usage. (Ball.)

*Eng. 110, 111. Elizabethan and Jacobean Drama. (3, 3)*

First and second semesters. (Zeeveld, Mish.)

*Eng. 112. Poetry of the Renaissance. (3)*

(Not offered 1960-61.) (Zeeveld.)

- Eng. 113. Prose of the Renaissance.* (3)  
(Not offered 1960-61.) (Zeeveld, Mish.)
- Eng. 115, 116. Shakespeare.* (3, 3)  
First and second semesters. Twenty-one important plays. (Zeeveld.)
- Eng. 120. English Drama from 1660 to 1800.* (3)  
Second semester. The important dramatists from Wycherley to Sheridan, with emphasis upon the comedy of manners. (Ward.)
- Eng. 121. Milton.* (3)  
Second semester. (Murphy.)
- Eng. 122. Literature of the Seventeenth Century, 1600-1660.* (3)  
First semester. The major non-dramatic writers (exclusive of Milton). (Murphy, Mish.)
- Eng. 123. Literature of the Seventeenth Century, 1660-1700.* (3)  
Second semester. The Age of Dryden, with the exception of the drama. (Aldridge.)
- Eng. 125, 126. Literature of the Eighteenth Century.* (3, 3)  
First and second semesters. (Aldridge.)
- Eng. 129, 130. Literature of the Romantic Period.* (3, 3)  
First and second semesters. (Weber.)
- Eng. 134, 135. Literature of the Victorian Period.* (3, 3)  
First and second semesters. (Cooley.)
- Eng. 139, 140. The English Novel.* (3, 3)  
First and second semesters. (Ward, Brown.)
- Eng. 143. Modern Poetry.* (3)  
First semester. The chief British and American poets of the twentieth century. (Fleming.)
- Eng. 144. Modern Drama.* (3)  
First semester. The drama from Ibsen to the present. (Weber.)
- Eng. 145. The Modern Novel.* (3)  
Second semester. Major English and American novelists of the twentieth century. (Andrews.)
- Eng. 148. The Literature of American Democracy.* (3)  
Second semester. (Barnes.)
- Eng. 150, 151. American Literature.* (3, 3)  
First and second semesters. Representative American poetry and prose from colonial times to the present with special emphasis on the literature of the nineteenth century. (Manning, Gravely, Beall, Lutwack.)

Eng. 155, 156. *Major American Writers.* (3, 3)

First and second semesters. Two writers studied intensively each semester.

(Gravely, Manning, Portz.)

Eng. 157. *Introduction to Folklore.* (3)

First semester. Historical background of folklore studies; types of folklore with particular emphasis on folktales and folksongs, and on American folklore. (Cooley.)

Eng. 160. *Advanced Expository Writing.* (3)

Second semester. Theories of composition; editing; style manuals. Practice in writing essays, critical papers, reports. (Barnes.)

Eng. 170. *Creative Writing.* (2)

First semester.

(Fleming.)

Eng. 171. *Advanced Creative Writing.* (2)

Second semester. Prerequisite, permission of the instructor.

(Fleming.)

Eng. 172. *Playwriting.* (2)

Second semester. Prerequisite, permission of the instructor.

(Fleming.)

Eng. 199. *Honors Conference Course.* (3)

Second semester. Open only to seniors. Prerequisite, candidacy for honors in English. A topic will be studied in selected literary works of various periods and types. Readings; discussions; conferences; preparation of a term paper. (Cooley.)

*For Graduates*

Eng. 201. *Bibliography and Methods.* (3)

First semester. An introduction to the principles and methods of research.

(Mish.)

Eng. 202. *Middle English.* (3)

Second semester.

(Harman.)

Eng. 203. *Gothic.* (3)

First semester.

(Harman.)

Eng. 204. *Seminar in Medieval Literature.* (3)

Second semester.

(Cooley.)

Eng. 206, 207. *Seminar in Renaissance Literature.* (3, 3)

First and second semesters.

(McManaway, Zeeveld.)

Eng. 210. *Seminar in Seventeenth-Century Literature.* (3)

Second semester.

(Mish.)

Eng. 212, 213. *Seminar in Eighteenth-Century Literature.* (3, 3)

First and second semesters.

(Aldridge.)

Eng. 214, 215. *Seminar in Nineteenth-Century Literature.* (3)

First and second semesters.

(Cooley, Weber.)

*Eng. 216, 217. Literary Criticism. (3, 3)*

First and second semesters.

(Murphy, Lutwack.)

*Eng. 225, 226. Seminar in American Literature. (3, 3)*

First and second semesters.

(Bode.)

*Eng. 227, 228. Problems in American Literature. (3, 3)*

First and second semesters. (Not offered 1960-61.)

(Aldridge.)

*Eng. 399. Thesis Research. (1-6)*

Arranged.

(Staff.)

## FOREIGN LANGUAGES AND LITERATURES

*Professor and Head:* ZUCKER.

*Professors:* FALLS, GOODWYN, PRAHL AND SMITH.

*Associate Professors:* BINGHAM, KRAMER, PARSONS, QUINN, RAND AND ROSENFELD.

*Assistant Professors:* BRIDGERS, BULATKIN, DOBERT, HALL, HERING, NEMES AND SCHWEIZER.

*Instructors:* ADAMS (P.T.), ANDERSON, ARSENAULT, BOBORYKINE, CHEN (P.T.), GREENBERG (P.T.), JAMES, LEE, NORTON, ROSWELL AND ROVNER.

At the beginning of each semester a placement examination is given for all students who have had some foreign language in high school and wish to do further work in that language. By this means the Department assigns each student to the suitable level of instruction. Any student who fails to qualify for the second semester of his language will be required to register for the first without credit or register for a different language. (Students who wish to continue Latin should consult the section on classical languages elsewhere in these pages).

No credit will be given for the elementary first semester (1) alone unless followed by further study.

Language conversation courses, 3, 8, or 9, are not to be taken to meet the college requirement of 12 hours of language unless the student has finished the second semester of second year French, German, Spanish, etc. (5, 7, or 17). Taking conversation courses to meet the college requirement is permitted in the case of students who enter language courses with advanced standing.

A student whose native language is taught at the University may not meet the language requirement by taking freshman or sophomore courses in his language.

**HONORS IN FRENCH, GERMAN OR SPANISH:** A student whose major is in French, German or Spanish and who maintains an approved average in his grades may read for honors in French, German or Spanish. A candidate for



honors is examined upon an approved individual program of readings in an area of his special interest. Application may be made to the Head of the Department of Foreign Languages between the second semester of the sophomore year and the first semester of the senior year.

Attention is called to the courses in comparative literature elsewhere in these pages.

*Foreign Language 1, 2. English for Foreign Students. (3, 3)*

First and second semesters. An introduction to English usage, adapted to the needs of the non-English-speaking student. Pronunciation, spelling, syntax; the differences between English and various other languages are stressed. (Bridgers.)

*Foreign Language 140. Oral Practice in Modern Foreign Languages. (French, German, Russian, or Spanish). (3)*

Development of fluency in modern foreign languages, stress on correct sentence structure and idiomatic expression. Especially designed for teachers, offering practice in speaking the language. (Rovner.)

Attention is called to Ed. 142 and 143.

**FRENCH**

*French 0. Intensive Elementary French. (0)*

First and second semesters. Summer session. Intensive elementary course in the French language designed particularly for graduate students who wish to acquire a reading knowledge. (Hall.)

*French 1, 2. Elementary French. (3, 3)*

First and second semesters. French 2, Summer session. Three recitations and one laboratory period per week. A student who has had two units of French in high school may take French 1 for purposes of review, but not for credit. Elements of grammar and exercises in translation. One hour drill in pronunciation and conversation. (Falls, Staff.)

*French 3. Elementary Conversation. (1)*

First and second semesters. Open to all students who have completed their first year French or French 1 with the grade "A" or "B". (Arsenault.)

*French 4, 5. Intermediate Literary French. (3, 3)*

First and second semesters. Summer session. Prerequisite, French 2 or equivalent. Students who have taken French 6 and 7 cannot receive credit for French 4 and 5. Reading of texts designed to give some knowledge of French life, thought and culture. (Falls, Staff.)

*French 6, 7. Intermediate Scientific French. (3, 3)*

First and second semesters. Prerequisite, French 2 or equivalent. Students who have taken French 4 and 5 cannot receive credit for French 6 and 7. Reading of technical and scientific prose with some grammar review. (Kramer, Staff.)

*French 8, 9. Intermediate Conversation. (3, 3)*

First and second semesters. Prerequisite: for French 8, French 3 or consent of instructor; for French 9, French 8 or consent of instructor. (Arsenault.)

*French 17. Grammar Review. (3)*

First and second semesters. May be taken after completion of French 4 or 5. Recommended for students who expect to major or minor in French. (Hall.)

*For Advanced Undergraduates*

*French 51, 52. The Development of the French Novel. (3, 3)*

First and second semesters. Introductory study of the history and growth of the novel in French literature. French 51 covers the seventeenth and eighteenth centuries, French 52 the nineteenth. (Kramer.)

*French 53, 54. The Development of the French Drama. (3, 3)*

First and second semesters. Introductory study of the French drama. French 53 covers the seventeenth and eighteenth centuries, French 54 the nineteenth. (Kramer.)

*French 55, 56. The Development of the Short Story in French. (3, 3)*

First and second semesters. A study of the short story in French literature. French 55 covers examples up to the nineteenth century, French 56 the nineteenth and twentieth centuries. (Kramer.)

*French 61, 62. French Phonetics. (1, 1)*

First and second semesters. Prerequisite, French 2 or equivalent. Elements of French phonetics, diction and intonation. (Hall.)

*French 71, 72. Review Grammar and Composition. (3, 3)*

First and second semesters. Prerequisite, French 17 or equivalent. For students who having a good knowledge of French, wish to become more proficient in the written and spoken language. (Quynn, Bingham.)

*French 75, 76. Introduction to French Literature. (3, 3)*

First and second semesters. Prerequisite, second year French or equivalent. An elementary survey of the chief authors and movements in French literature. (Falls, Hall.)

*French 80, 81. Advanced Conversation. (3, 3)*

First and second semesters. For students who wish to develop fluency and confidence in speaking the language. (Arsenault.)

*For Advanced Undergraduates and Graduates*

*French 100. French Literature of the Sixteenth Century. (3)*

First semester. The Renaissance in France; humanism; Rabelais and Calvin; the Pleiade; Montaigne. (Falls.)

*French 101, 102. French Literature of the Seventeenth Century. (3, 3)*

First and second semester. First semester: Descartes, Pascal, Corneille, Racine. Second semester: the remaining great classical writers, with special attention to Moliere. (Quynn, Rosenfield.)

## Foreign Languages and Literatures

*French 103, 104. French Literature of the Eighteenth Century.* (3, 3)  
First and second semesters. First semester: development of the philosophical and scientific movement; Montesquieu. Second semester: Voltaire, Diderot, Rousseau.  
(Falls, Bingham.)

*French 105, 106. French Literature of the Nineteenth Century.* (3, 3)  
First and second semesters. First semester: drama and poetry from Romanticism to Symbolism. Second semester: the major prose writers of the same period.  
(Bingham, Quynn.)

*French 107, 108. French Literature of the Twentieth Century.* (3, 3)  
First and second semesters. First semester: drama and poetry from Symbolism to the present time. Second semester: the contemporary novel.  
(Falls.)

*French 121, 122. Advanced Composition.* (3, 3)  
First and second semesters. Translation from English into French, free composition, letter writing.  
(Falls.)

*French 161, 162. French Civilization.* (3, 3)  
First and second semesters. French life, customs, culture, traditions. First semester: the historical development. Second semester: present-day France.  
(Rosenfield, Bingham.)

*French 171. Practical French Phonetics.* (3)  
First semester. Pronunciation of modern French. The sounds and their production, the stress group, intonation.  
(Smith.)

*French 199. Rapid Review of the History of French Literature.* (1)  
Second semester. Especially designed for French majors. Weekly lectures stressing the high points in the history of French literature.  
(Falls.)

## For Graduates

The requirements of students will determine which courses will be offered.

*French 207, 208. The French Novel in the First Half of the Nineteenth Century.* (2, 2)  
First and second semesters.  
(Falls.)

*French 209, 210. The French Novel in the Second Half of the Nineteenth Century.* (2, 2)  
First and second semesters.  
(Falls.)

*French 211. French Linguistics.* (3)  
First semester.  
(Smith, Bulatkin.)

*French 212. Old French Readings.* (3)  
Second semester.  
(Smith, Bulatkin.)

*French 215, 216. Moliere.* (3, 3)  
First and second semesters.  
(Quynn.)

*French 221, 222. Reading Course. (Arranged)*

Designed to give the graduate student a background of a survey of French literature. Extensive outside readings, with reports and periodic conferences. (Staff.)

*French 230. Introduction to European Linguistics. (3)*

(Smith, Bulatkin.)

*French 251, 252. Seminar. (3, 3)*

Required of all graduate majors in French.

(Staff.)

*French 399. Research.*

Credits determined by work accomplished. Guidance in the preparation of master's and doctoral theses. Conferences. (Staff.)

GERMAN

*German 0. Intensive Elementary German. (0)*

First and second semesters. Summer session. Intensive elementary course in the German language designed particularly for graduate students who wish to acquire a reading knowledge. (Kramer, Hering.)

*German 1, 2. Elementary German. (3, 3)*

First and second semesters. German 2, Summer session. Three recitations and one laboratory period per week. A student who has had two units of German in high school may take German 1 for purposes of review, but not for credit. Elements of grammar and exercises in translation. One hour drill in pronunciation and conversation. (Dobert, Staff.)

*German 3. Elementary Conversation. (1)*

First and second semesters. Open to all students who have completed their first year German or German 1 with the grade "A" or "B". (Staff.)

*German 4, 5. Intermediate Literary German. (3, 3)*

First and second semesters. Summer session. Prerequisite, German 2 or equivalent. Students who have taken German 6 and 7 cannot receive credit for German 4 and 5. Reading of narrative prose designed to give some knowledge of German life, thought and culture. (Dobert, Staff.)

*German 6, 7. Intermediate Scientific German. (3, 3)*

First and second semesters. Prerequisite, German 2 or equivalent. Students who have taken German 4 and 5 cannot receive credit for German 6 and 7. Reading of technical and scientific prose, with some grammar review. (Kramer, Staff.)

*German 8, 9. Intermediate Conversation. (3, 3)*

First and second semesters. Prerequisite: for German 8, German 3 or consent of instructor; for German 9, German 8 or consent of instructor. (Anderson.)

*German 17. Grammar Review. (3)*

First and second semesters. May be taken after completion of German 4 or 5. Recommended for students who wish to major or minor in German. (Kramer.)

*For Advanced Undergraduates*

*German 61, 62. German Phonetics. (1, 1)*

First and second semesters. Prerequisite, German 2 or equivalent. Pronunciation of German, study of phonetics, oral exercises and ear training. (Schweizer.)

*German 71, 72. Review Grammar and Composition. (3, 3)*

First and second semesters. Prerequisite, German 4, 5, or equivalent. This course is required of students preparing to teach German. A thorough study of the more detailed points of German grammar with ample practice in composition work. (Kramer.)

*German 75, 76. Introduction to German Literature. (3, 3)*

First and second semesters. Prerequisite, German 4, 5, or equivalent. An elementary survey of the chief authors and movements in German literature. (Schweizer, Dobert.)

*German 80, 81. Advanced Conversation. (3, 3)*

First and second semesters. Prerequisite, German 8, 9 or consent of instructor. For students who wish to develop fluency and confidence in speaking the language. (Dobert.)

*For Advanced Undergraduates and Graduates*

*German 101, 102. German Literature of the Eighteenth Century. (3, 3)*

First and second semesters. The main works of Klopstock, Wieland, Lessing, Herder, Goethe, Schiller. (PrahI, Schweizer.)

*German 103, 104. German Literature of the Nineteenth Century. (3, 3)*

First and second semesters. Outstanding works of Kleist, Grillparzer, Grabbe, Hebbel, Ludwig, Stifter, Keller, Anzengruber. (PrahI, Schweizer.)

*German 105, 106. Modern German Literature. (3, 3)*

First and second semesters. Prose and dramatic writings from Gerhart Hauptmann to the present time (1890-1950.) (PrahI, Dobert.)

*German 107, 108. Goethe's Faust. (2, 2)*

First and second semesters. First and second parts of the drama. (Hering.)

*German 121, 122. Advanced Composition. (3, 3)*

First and second semesters. Translation from English into German, free composition, letter writing. (Kramer, Dobert.)

*German 161, 162. German Civilization. (3, 3)*

First and second semesters. A survey of two thousand years of German history, outlining the cultural heritage of the German people, their great men, tradition, customs, art and literature, with special emphasis on the interrelationship of social and literary history. (PrahI.)

*German 199. Rapid Review of the History of German Literature. (1)*

Second semester. Especially designed for German majors. (Schweizer.)



Attention is called to Comparative Literature 106, Romanticism in Germany, and Comparative Literature 107, The Faust Legend in English and German Literature.

For Graduates

The requirements of students will determine which courses will be offered.

*German 202, 203. The Modern German Drama. (3, 3)*  
First and second semesters. (Zucker.)

*German 204. Schiller. (3)*  
(Pahl.)

*German 205. Goethe's Works Outside of Faust. (2)*  
(Zucker.)

*German 206. The Romantic Movement. (3)*  
(Pahl.)

*German 221, 222. Reading Course. (Arranged)*  
Designed to give the graduate student a background of a survey of German literature. Extensive outside readings, with reports and periodic conferences. (Staff.)

*German 230. Introduction to European Linguistics. (3)*  
(Smith, Bulatkin.)

*German 231. Middle High German. (3)*  
(Schweizer.)

*German 251, 252. Seminar. (3, 3)*  
Required of all graduate majors in German. (Staff.)

*German 399. Research.*  
Credits determined by work accomplished. Guidance in the preparation of master's and doctoral theses. Conferences. (Staff.)

SPANISH

*Spanish 1, 2. Elementary Spanish. (3, 3)*  
First and second semesters. Spanish 2, summer session. Three recitations and one laboratory period per week. A student who has had two units of Spanish in high school may take Spanish 1 for purposes of review, but not for credit. Elements of grammar and exercises in translation. One hour drill in pronunciation and conversation. (Parsons, Staff.)

*Spanish 3. Elementary Conversation. (1)*  
First and second semesters. Open to all students who have completed their first year Spanish or Spanish 1 with the grade "A" or "B". (Nemes.)

*Spanish 4, 5. Intermediate Spanish. (3, 3)*  
First and second semesters. Summer session. Prerequisite, Spanish 2 or equivalent. Reading of texts designed to give some knowledge of Spanish and Latin-American life, thought and culture. (Parsons, Staff.)

*Spanish 8, 9. Intermediate Conversation. (3, 3)*  
First and second semesters. Prerequisite: for Spanish 8, Spanish 3 or consent of instructor; for Spanish 9, Spanish 8 or consent of instructor. (Nemes.)

*Spanish 17. Grammar Review. (3)*

First and second semesters. May be taken after completion of Spanish 4 or 5. Recommended for students who expect to major or minor in Spanish.

(Rovner, Norton.)

*For Advanced Undergraduates*

*Spanish 51, 52. Business Spanish. (3, 3)*

First and second semesters. Prerequisite, second year Spanish or equivalent. Designed to give a knowledge of correct Spanish usage; commercial letters.

(Bingham.)

*Spanish 61, 62. Spanish Phonetics. (1, 1)*

First and second semesters. Prerequisite, Spanish 2 or equivalent. The pronunciation of Spanish, study of phonetics, oral exercises, and ear training.

(Goodwyn.)

*Spanish 71, 72. Review Grammar and Composition. (3, 3)*

First and second semesters. Prerequisite, Spanish 4, 5 or equivalent. Intended to give an intensive and practical drill in Spanish composition.

(Parsons, Rand.)

*Spanish 75, 76. Introduction to Spanish Literature. (3, 3)*

First and second semesters. Prerequisite, Spanish 4, 5, or equivalent. An elementary survey of the history of Spanish literature.

(Parsons, Rand.)

*Spanish 80, 81. Advanced Conversation. (3, 3)*

First and second semesters. Prerequisite, Spanish 8, 9, or consent of instructor. For students who wish to develop fluency and confidence in speaking the language.

(Nemes.)

*For Advanced Undergraduates and Graduates*

*Spanish 101. Epic and Ballad. (3)*

First semester. The legendary and heroic matter of Spain. Readings of the *Poema del Cid* and of ballads of various cycles.

(Parsons.)

*Spanish 102. The Spanish Popular Ballad. (3)*

Second semester. Typical ballads composed and developed in the Spanish-speaking world during and since the Golden Age, with stress on the folkloristic point of view.

(Goodwyn.)

*Spanish 104. The Drama of the Golden Age. (3)*

First semester. Selected plays of Lope de Vega, Calderon de la Barca, Tirso de Molina and others.

(Parsons.)

*Spanish 107. Cervantes: Plays and Exemplary Novels. (3)*

First semester.

(Rand.)

*Spanish 108. Lope de Vega. (3)*

First semester. Selected works of Lope de Vega.

(Parsons.)

*Spanish 109. Cervantes: Don Quixote. (3)*

Second semester.

(Goodwyn.)

- Spanish 110. Modern Spanish Poetry.* (3)  
First semester. Significant poems of the nineteenth and twentieth centuries. (Rand.)
- Spanish 111. The Spanish Novel of the Nineteenth Century.* (3)  
First semester. Readings of some of the significant novels of the nineteenth century. (Parsons.)
- Spanish 112. Modern Spanish Drama.* (3)  
Second semester. Significant plays of the nineteenth and twentieth centuries. (Nemes.)
- Spanish 113. The Spanish Novel of the Twentieth Century.* (3)  
Second semester. Significant novels of the twentieth century. (Rand.)
- Spanish 115. Modern Spanish Thought.* (3)  
First semester. The generation of 1898 and other significant and interpretative writings of the twentieth century. (Rand.)
- Spanish 121, 122. Advanced Composition.* (3, 3)  
First and second semesters. Training in self-expression in Spanish, free composition, letter writing. (Goodwyn.)
- Spanish 151. Spanish-American Fiction.* (3)  
First semester. The novel and short story from the Wars of Independence to the present and their reflection of society in the republics of the Western Hemisphere. (Nemes.)
- Spanish 152. Spanish-American Poetry.* (3)  
Second semester. Representative poetry after 1800 and its relation to European trends and writers. (Nemes.)
- Spanish 153. Spanish-American Essay.* (3)  
First and second semesters. Social and political thought from Bolivar to Vasconcelos and its relationship to social and political conditions in Spanish America. (Nemes.)
- Spanish 161, 162. Spanish Civilization.* (3, 3)  
First and second semesters. Introductory study of the literary, educational, artistic traditions; great men, customs, and general culture. (Rand.)
- Spanish 163, 164. Latin-American Civilization.* (3, 3)  
First and second semesters. Introductory study of the cultures of Latin America; the historical-political background and the dominating concepts in the lives of the people. (Goodwyn.)
- Spanish 199. Rapid Review of the History of Spanish Literature.* (1)  
Second semester. Especially designed for Spanish majors. (Parsons.)

### For Graduates

The requirements of students will determine which courses will be offered.

- Spanish 202. The Golden Age in Spanish Literature.* (3)  
(Goodwyn.)

## Foreign Languages and Literatures

*Spanish 203, 204. Spanish Poetry. (3, 3)*

(Goodwyn.)

*Spanish 205, 206. Spanish Literature of the Twentieth Century. (3, 3)*

(Rand.)

*Spanish 211. Spanish Linguistics. (3)*

First semester.

(Parsons, Bulatkin.)

*Spanish 212. Old Spanish Readings. (3)*

Second semester.

(Parsons, Bulatkin.)

*Spanish 221, 222. Reading Course. (Arranged)*

Designed to give the graduate student a background of a survey of Spanish literature. Extensive outside readings, with reports and periodic conferences. (Staff.)

*Spanish 230. Introduction to European Linguistics. (3)*

(Smith, Bulatkin.)

*Spanish 251, 252. Seminar. (3, 3)*

Required of all graduate majors in Spanish.

(Staff.)

*Spanish 399. Research.*

Credits determined by work accomplished. Guidance in the preparation of master's and doctoral theses. Conferences. (Staff.)

## RUSSIAN

*Russian 1, 2. Elementary Russian. (3, 3)*

First and second semesters. Elements of grammar; pronunciation and conversation; exercises in translation. One laboratory period per week. (Boborykine, Lee.)

*Russian 3. Elementary Conversation. (1)*

First and second semesters. Open to all students who have completed their first year Russian or Russian 1 with the grade "A" or "B". (Boborykine.)

*Russian 4, 5. Intermediate Russian. (3, 3)*

First and second semesters. Prerequisite, Russian 2 or equivalent. Reading of texts designed to give some knowledge of Russian life, thought and culture. (Boborykine.)

*Russian 8, 9. Intermediate Conversation. (3, 3)*

First and second semesters. Prerequisite: for Russian 8, Russian 3 or consent of instructor; for Russian 9, Russian 8 or consent of instructor. (Boborykine.)

*Russian 10, 11. Scientific Russian. (3, 3)*

Prerequisite, Russian 5 or equivalent.

(Boborykine.)

*Russian 71, 72. Review Grammar and Composition. (3, 3)*

First and second semesters. Prerequisite, first and second year Russian. Designed to give a thorough training in the structure of the language; drill in Russian composition. (Boborykine.)

*Russian 75, 76. Introduction to Russian Literature. (3, 3)*

First and second semesters. Prerequisite, second-year Russian or equivalent. An elementary survey of Russian literature. (Boborykine.)

*Russian 80, 81. Advanced Conversation. (3, 3)*

First and second semesters. Prerequisite, Russian 8, 9, or consent of instructor. For students who wish to develop fluency and confidence in speaking the language. (Boborykine.)

*For Advanced Undergraduates and Graduates*

*Russian 101, 102. Modern Russian Literature. (3, 3)*

First and second semesters. Works of Maxim Gorky, Alexei Tolstoy, P. Romanov, M. Zoshchenko, M. Sholokhov. (Boborykine.)

*Russian 103, 104. Russian Literature of the Nineteenth Century. (3, 3)*

First and second semesters. Selected writings of Pushkin, Gogol, Lermantov, Turgenyev, Dostoevsky, Leo Tolstoy, Chekhov. (Boborykine.)

HEBREW

*Hebrew 1, 2. Elementary Hebrew. (3, 3)*

First and second semesters. Elements of grammar; pronunciation and conversation; exercises in translation. (Greenberg.)

*Hebrew 3. Elementary Conversation. (1)*

First semester. Prerequisite, Hebrew 1 and consent of instructor. (Greenberg.)

*Hebrew 4, 5. Intermediate Hebrew. (3, 3)*

First and second semesters. Prerequisite, Hebrew 2 or equivalent. Texts designed to give some knowledge of Hebrew life, thought, and culture. (Greenberg.)

*Hebrew 8, 9. Intermediate Conversation. (2, 2)*

First and second semesters. Prerequisite: for Hebrew 8, Hebrew 3 or consent of instructor; for Hebrew 9, Hebrew 8 or consent of instructor. An intermediate practice course in spoken Hebrew. (Greenberg.)

*Hebrew 75, 76. Introduction to Hebrew Literature. (3, 3)*

First and second semesters. Prerequisite, second year Hebrew or equivalent. (Greenberg)

*Hebrew 101. The Hebrew Bible. (3)*

Reading of selected portions of the Pentateuch. (Greenberg.)

*Hebrew 102. The Hebrew Bible. (3)*

Reading of selected portions of the Prophets. (Greenberg.)

*Hebrew 103. Modern Hebrew Literature. (3)*

The period of the Haskalah (Enlightenment). (Greenberg.)



## Foreign Languages and Literatures

### Hebrew 104. *Modern Hebrew Literature.* (3)

The period of the Tehiah (Modern Revival).

(Greenberg.)

## CHINESE

### *Chinese 1, 2. Elementary Chinese.* (3, 3)

First and second semesters. Three recitations and one laboratory period per week. Elements of pronunciation, simple ideograms, colloquial conversation, translation.

(Chen.)

### *Chinese 4, 5. Intermediate Chinese.* (3, 3)

First and second semesters. Prerequisite, Chinese 2 or equivalent. Reading of texts designed to give some knowledge of Chinese life, thought, and culture.

(Chen.)

### *Chinese 101, 102. Readings from Chinese History.* (3, 3)

First and second semesters. Prerequisite, Chinese 5 or equivalent. Based on an anthology of historians from the Chou to the Ching dynasties.

(Chen.)

### *Chinese 161, 162. Chinese Civilization.* (3, 3)

First and second semesters. This course supplements Geog. 134 and 135, *Cultural Geography of East Asia*. It deals with Chinese literature, art, folklore, history, government, and great men. Second semester: developments in China since 1911. The course is given in English translation.

Chinese 161 and 162 may be counted as history credits in meeting major and minor requirements.

(Chen.)

## ITALIAN

### *Italian 1, 2. Elementary Italian.* (3, 3)

Three recitations and one laboratory hour per week. Elements of grammar and exercises in translation. One hour drill in pronunciation and conversation. A student who has had two units of Italian in high school may take Italian 1 for purposes of review, but not for credit.

(Smith, Adams.)

### *Italian 3. Elementary Conversation.* (1)

Open to all students who have completed their first year Italian or Italian 1 with the grade "A" or "B".

(Staff.)

### *Italian 4, 5. Intermediate Italian.* (3, 3)

First and second semesters. Prerequisite, Italian 2 or equivalent. Reading of texts designed to give some knowledge of Italian life, thought, and culture.

(Smith, Adams.)

### *Italian 161, 162. Italian Life and Customs.* (3, 3)

Not offered on the College Park campus. An introductory study of the Italian people against a background of political and social history. A survey of Italian literary and cultural traditions.

## GEOGRAPHY

Students in the College of Arts and Sciences may select geography as a major field, and may also take courses in this Department for elective credit. For a description of courses, see the catalog of the College of Business and Public Administration.

## GEOLOGY

*Lecturer:* BROWN.

### *Geol. 1. Geology. (3)*

Prerequisite, Chem. 3. A study dealing primarily with the principles of dynamical and structural geology. Designed to give a general survey of the rocks and minerals composing the earth; the movement within it; and its surface features and the agents that form them.

### *Geol. 2. Engineering Geology. (2)*

The fundamentals of geology with engineering applications.

## GOVERNMENT AND POLITICS

Students in the College of Arts and Sciences may select government and politics as a major field, and may also take courses in this Department for elective credit. For a description of courses, see the catalog of the College of Business and Public Administration.

## HISTORY

*Professor and Head:* LAND.

*Professors:* BAUER, CHATELAIN, MERRILL, PRANCE AND WELLBORN.

*Associate Professors:* GORDON, JASHEMSKI, SPARKS AND STROMBERG.

*Assistant Professors:* BEARD, CALLCOTT, CONKIN, CROSMAN, FERGUSON AND RIVLIN.

*Instructors:* EGGERT AND PITT.

### *H. 1, 2. History of Modern Europe. (3, 3)*

First and second semesters. The basic course, prerequisite for all advanced courses in European history. H. 2 may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. A study of European history from the Renaissance to the present day. First semester to 1815. Second semester since 1815. (Staff.)

### *H. 5, 6. History of American Civilization. (3, 3)*

Required of all students who entered the University after 1944-45. Normally to be taken in the sophomore year. An historical survey of the main forces in American life with emphasis upon the development of our democratic heritage. First semester from the colonial period through the Civil War. Second semester, since the Civil War. (Staff.)

## History

### H. 51, 52. *The Humanities.* (3, 3)

First and second semesters. Either of these courses may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. In surveying history from prehistoric times to the present, man's cultural development is emphasized. The course is a study of the achievements of the various civilizations which have contributed to the common cultural heritage of western civilization. It is designed as an introductory course in history which will make a more direct contribution to the other liberal art fields. First semester to the Renaissance. Second semester since the Renaissance. (Jashemski.)

### H. 53, 54. *History of England and Great Britain.* (3, 3)

First and second semesters. A history of the development of British life and institutions. Open to all classes. Especially recommended for English majors and minors and pre-law students. First semester to 1485. Second semester, since 1485. (Gordon.)

### H. 56. *American Life and Thought.* (3)

First and second semesters. Required of all students who qualify by examination for exemption from H. 5, 6. Normally to be taken in sophomore year. A survey of significant historical trends and selected problems in the development of American civilization from the colonial era to recent times. Not to be used as a general elective course. (Staff.)

## *For Advanced Undergraduates and Graduates*

### AMERICAN HISTORY

#### H. 101. *American Colonial History.* (3)

First semester. Prerequisite, H. 5, 6, or the equivalent. The settlement and development of colonial America to the middle of the eighteenth century. (Ferguson.)

#### H. 102. *The American Revolution.* (3)

Second semester. Prerequisite, H. 5, 6, or the equivalent. The background and course of the American Revolution through the formation of the Constitution. (Ferguson.)

#### H. 105. *Social and Economic History of the United States to 1865.* (3)

First semester. Prerequisite, H. 5, 6, or the equivalent. A synthesis of American life from independence through the Civil War. (Chatelain.)

#### H. 106. *Social and Economic History of the United States since the Civil War.* (3)

Second semester. Prerequisite, H. 5, 6, or the equivalent. The development of American life and institutions, with emphasis upon the period since 1876. (Chatelain.)

#### H. 114. *The Middle Period of American History 1800-1860.* (3)

First semester. Prerequisite, H. 5, 6, or the equivalent. An examination of the political history of the U. S. from Jefferson to Lincoln with particular emphasis on the factors producing Jacksonian democracy, Manifest Destiny, the Whig Party, the anti-slavery movement, the Republican Party, and secession. (Sparks.)

*H. 115. The Old South. (3)*

First semester. Prerequisite, H. 5, 6, or the equivalent. A study of the institutional and cultural life of the ante-bellum South with particular reference to the background of the Civil War. (Staff.)

*H. 116. The Civil War. (3)*

Second semester. Prerequisite, H. 5, 6, or the equivalent. Military aspects; problems of the Confederacy; political, social, and economic effects of the war upon American society. A tour of one selected battlefield is a required part of the course. (Sparks.)

*H. 117. The New South. (3)*

First semester. Prerequisite, H. 5, 6, or the equivalent. The South's place in the nation from Appomattox to the present with special reference to regional problems and aspirations. (Staff.)

*H. 118, 119. Recent American History. (3, 3)*

First and second semesters. Prerequisite, H. 5, 6, or the equivalent. Party politics, domestic issues, foreign relations of the United States since 1890. First semester, through World War I. Second semester, since World War I. (Merrill.)

*H. 121. History of the American Frontier. (3)*

First semester. Prerequisite, H. 5, 6, or the equivalent. The Trans-Allegheny West. The westward movement into the Mississippi Valley. (Pitt.)

*H. 122. History of the American Frontier. (3)*

Second semester. Prerequisite, H. 5, 6, or the equivalent. The Trans-Mississippi West. Forces and factors in the settlement and development of the Trans-Mississippi West to about 1900. (Staff.)

*H. 123. The New West. (3)*

Second semester. Prerequisite, H. 5, 6, or the equivalent. Regional peculiarities and national significance of the Plains and Pacific Coast areas from 1890 to the present. (Staff.)

*H. 124. Reconstruction and the New Nation 1865-1896. (3)*

Second semester. Prerequisite, H. 5, 6, or the equivalent. Problems of reconstruction in both South and North. Emergence of big business and industrial combinations. Problems of the farmer and laborer. (Merrill.)

*H. 127, 128. Diplomatic History of the United States. (3, 3)*

First and second semesters. Prerequisite, H. 5, 6, or the equivalent. An historical study of the diplomatic negotiations and foreign relations of the United States. First semester from the Revolution to the Civil War; second semester, from the Civil War to the present. (Wellborn.)

*H. 129. The United States and World Affairs. (3)*

Prerequisite, H. 5, 6, or the equivalent. A consideration of the changed position of the United States with reference to the rest of the world since 1917. (Wellborn.)

*H. 133, 134. The History of Ideas in America. (3, 3)*

First and second semesters. Prerequisite, H. 5, 6, or the equivalent. An intellectual

history of the American people, embracing such topics as liberty, democracy, and social ideas. (Beard.)

*H. 135, 136. Constitutional History of the United States. (3, 3)*

First and second semesters. Prerequisite, H. 5, 6, or the equivalent. A study of the historical forces resulting in the formation of the Constitution, and the development of American constitutionalism in theory and practice thereafter. (Land.)

*Amer. Civ. 137, 138. Conference Course in American Civilization. (3, 3)*

First and second semesters. The student's acquaintance with American civilization is brought to a focus through the analytical study of eight to ten important books, such as De Tocqueville, *Democracy in America*, Hawthorne, *The Scarlet Letter*, Veblen, *The Theory of the Leisure Class*, and Myrdal, *An American Dilemma*. Specialists from related departments participate in the conduct of the course. (Bode.)

*H. 141, 142. History of Maryland. (3, 3)*

First and second semesters. Prerequisite, H. 5, 6, or the equivalent. First semester, a survey of the political, social and economic history of colonial Maryland. Second semester, Maryland's historical development and role as a state in the American Union. (Chatelain.)

*H. 145, 146. Latin American History. (3, 3)*

First and second semesters. Prerequisite, 6 hours of fundamental courses. A survey of the history of Latin America from colonial origins to the present, covering political, cultural, economic, and social development, with special emphasis upon relations with the United States. First semester, the colonial period. Second semester, the Republics. (Crosman.)

*H. 147. History of Mexico. (3)*

First semester. The history of Mexico with special emphasis upon the independence period and upon relations between ourselves and the nearest of our Latin American neighbors. (Crosman.)

EUROPEAN AND ASIAN HISTORY

*H. 151. History of the Ancient Orient and Greece. (3)*

First semester. A survey of the ancient empires of Egypt, the Near East, and Greece, with particular attention to their institutions, life, and culture. (Jashemski.)

*H. 153. History of Rome. (3)*

Second semester. A study of Roman civilization from the earliest beginnings through the Republic and down to the last centuries of the Empire. (Jashemski.)

*H. 155. Medieval Civilization. (3)*

First semester. Prerequisite, H. 1, 2, or H. 53, 54, or the permission of the instructor. A survey of medieval life, culture, and institutions from the fall of the Roman Empire to the thirteenth century. (Staff.)

*H. 161. The Renaissance and Reformation. (3)*

Second semester. Prerequisite, H. 1, 2, or 53, or the permission of the instructor. The culture of the Renaissance, the Protestant revolt and Catholic reaction through the Thirty Years War. (Staff.)



*H. 163, 164. The Middle East. (3, 3)*

First and second semesters. Prerequisites, six hours from the following groups of courses: H. 1, 2; H. 51, 52; or H. 53, 54. A survey of the historical and institutional developments of the nations of this vital area. The Islamic Empires and their cultures; impact of the west; breakup of the Ottoman Empire and rise of nationalism; present day problems. (Rivlin.)

*H. 165. Topics from Middle Eastern History in the Nineteenth and Twentieth Centuries. (3)*

First semester. Prerequisite, H. 163, 164 or the equivalent or permission of the instructor. Conference course for advanced undergraduate and graduate students. Lectures and special assignments, dealing with Middle Eastern institutions in the nineteenth and twentieth centuries. (Rivlin.)

*H. 166. The French Revolution. (2)*

First semester. The Enlightenment and the Old Regime in France; the revolutionary uprisings from 1789 to 1799. (Gordon.)

*H. 167. Napoleonic Europe. (2)*

Second semester. European developments from the rise of Napoleon to the Congress of Vienna. (Gordon.)

*H. 171, 172. Europe in the Nineteenth Century, 1815-1919. (3, 3)*

First and second semesters. Prerequisite, H. 1, 2, or H. 53, 54. A study of the political, economic, social, and cultural development of Europe from the Congress of Vienna to the First World War. (Bauer.)

*H. 175, 176. Europe in the World Setting of the Twentieth Century. (3, 3)*

First and second semesters. Prerequisite, H. 1, 2, or H. 53, 54. A study of political, economic, and cultural developments in twentieth century Europe with special emphasis on the factors involved in the two World Wars and their global impacts and significance. (Prange.)

*H. 185, 186. History of the British Empire. (3, 3)*

First and second semesters. Prerequisite, H. 1, 2, or H. 53, 54. First semester, the developments of England's Mercantilist Empire and its fall in the war for American Independence (1783); second semester, the rise of the Second British Empire and the solution of the problem of responsible self-government (1783-1867), the evolution of the British Empire into a Commonwealth of Nations, and the development and problems of the dependent Empire. (Gordon.)

*H. 187. History of Canada. (3)*

First semester. Prerequisite, H. 1, 2, or H. 53, 54. A history of Canada, with special emphasis on the nineteenth century and upon Canadian relations with Great Britain and the United States. (Gordon.)

*H. 189. Constitutional History of Great Britain. (3)*

Second semester. A survey of constitutional development in England with emphasis on the real property aspects of feudalism, the growth of the common law, the development of Parliament, and the expansion of liberties of the individual. (Gordon.)

*H. 191. History of Russia. (3)*

First semester. Prerequisite, H. 1, 2, or the equivalent. A history of Russia from the earliest times to the present day. (Staff.)

*H. 192. Foreign Policy of the USSR. (3)*

Second semester. Prerequisite, H. 191. A survey of Russian foreign policy in the historical perspective, with special emphasis on the period of the USSR. Russian aims, expansion, and conflicts with the western powers of Europe, the Near and Middle East, and the Far East will be studied. (Staff.)

*H. 193, 194. History of European Ideas in Modern Times. (3, 3)*

First and second semesters. Prerequisite, H. 1, 2, or H. 53, 54 or equivalent. Beginning with a review of the basic Western intellectual traditions as a heritage from the Ancient World, the course will present selected important currents of thought from the scientific revolution of the sixteenth and seventeenth century down to the twentieth century. First semester through the eighteenth century. Second semester, nineteenth and twentieth centuries. (Stromberg.)

*H. 195. The Far East. (3)*

First semester. A survey of institutional, cultural and political aspects of the history of China and Japan and a consideration of present-day problems of the Pacific area. (Staff.)

*H. 196. Southeast Asia. (3)*

Second semester. Prerequisite, H. 1, 2, or H. 5. 6. The political, economic and cultural history of the new nations of Southern Asia with emphasis on the colonial period and a view to understanding contemporary developments. (Staff.)

*H. 199. Proseminar in Historical Writing. (3)*

First and second semesters. Discussions and term papers designed to acquaint the student with the methods and problems of research and presentation. The students will be encouraged to examine those phases of history in which they are most interested. Required of history majors in junior or senior year. (Bauer, Stromberg, Callcott.)

*For Graduates*

*H. 201. Seminar in American History. (3)*

(Staff.)

*H. 202. Historical Literature. (3)*

First and second semesters. Assignments in various selected fields of historical literature and bibliography to meet the requirements of qualified graduate students who need more intensive concentration. (Staff.)

*H. 203, 204. Seminar in the History of Maryland. (3, 3)*

First and second semesters. (Land.)

*H. 205, 206. Topics in American Economic and Social History. (3, 3)*

First and second semesters. Readings and conferences on the critical and source materials explaining our social and economic evolution. (Chatelain.)

H. 208. *Seminar in Recent American History.* (3)

Emphasis will be placed on the period since 1900.

(Merrill.)

H. 211. *The Colonial Period in American History.* (3)

First semester. Readings and conferences designed to familiarize the student with some of the sources and the classical literature of American colonial history.

(Ferguson.)

H. 212. *Period of the American Revolution.* (3)

Second semester. Readings and conferences designed to familiarize the student with some of the critical literature and sources of the period of the American Revolution.

(Ferguson.)

H. 214. *Seminar on the Middle Period of American History.* (3)

Selected research topics in the period from Jefferson to Lincoln.

(Sparks.)

H. 215. *The Old South.* (3)

Readings and conferences designed to familiarize the student with some of the standard sources and the classical literature of the ante-bellum South.

H. 216. *Seminar in the American Civil War.* (3)

Investigations in the political, military, and economic problems of the North and South during the Civil War.

(Sparks.)

H. 217. *Reconstruction and Its Aftermath.* (3)

A seminar on problems resulting from the Civil War. Political, social and economic reconstruction in South and North; projection of certain post war attitudes and problems into the present.

(Merrill.)

H. 221, 222. *History of the West.* (3, 3)

First and second semesters. Readings and conferences designed to give the student an acquaintance with some of the more important sources and some of the most significant literature of the advancing American frontier.

(Staff.)

H. 233, 234. *Topics in American Intellectual History.* (3, 3)

Readings and conferences on selected phases of American thought, with emphasis on religious traditions, social and political theory, and development of American ideas.

(Beard.)

H. 245. *Topics in Latin American History.* (3)

Selected readings, research, and conferences on important topics in Latin American history.

(Crosman.)

H. 250. *Seminar in European History.* (3)

(Bauer, Stromberg.)

H. 251. *Seminar in Greek History.* (3)

(Jashemski.)

H. 253. *Seminar in Roman History.* (3)

(Jashemski.)

*H. 255. Medieval Culture and Society. (3)*

Readings and conferences designed to acquaint the student with the important literature and interpretations on such topics as feudalism, the medieval church, schools and universities, Latin and vernacular literature, art and architecture. (Staff.)

*H. 265. Problems in Diplomatic History of the Middle East. (3)*

Second semester. Prerequisite, H. 163, 164 or H. 165 or the equivalent. Studies involving the international relations of the Middle East. A knowledge of French and/or another foreign language is required or permission of the instructor. (Rivlin.)

*H. 282. Problems in the History of World War II. (3)*

Investigation of various aspects of the Second World War, including military operations, diplomatic phases, and political and economic problems of the war and its aftermath. (Prange.)

*H. 285, 286. Seminar in the History of Britain and the British Empire. (3, 3)*  
(Gordon.)

*H. 287. Historiography. (3)*

First and second semesters. Readings and occasional lectures on the historical writing, the evolution of critical standards, the rise of auxiliary sciences, and the works of selected masters. The work of the course includes field trips to the Library of Congress and the National Archives. Required of all candidates for advanced degrees. (Sparks.)

*H. 399. Research. (1-6)*

Credit proportioned to amount of work. Arranged. Required of all candidates for degrees. (Staff.)

## LIBRARY SCIENCE

*Professor and Head:* ROVELSTAD.

*Assistant Professors:* COX AND URBAN.

*Instructors:* BAEHR, CARPER, DONAHUE, HAYES, PHILLIPS, PIERSON AND WEDEMEYER.

*L. S. 1, 2. Library Methods. (1, 1)*

First and second semesters. These introductory courses are intended to help students to use libraries with greater facility and effectiveness. Instruction, given in the form of lectures and practical work, is designed to interpret the library and its resources to the students. The courses consider the classification of books in libraries, the card catalog, periodical literature and indexes, and certain essential reference books which will be found helpful throughout the college course and in later years. (Staff.)

*L. S. 101S. School Library Administration. (3)*

No prerequisite. The organization and maintenance of effective library service in the modern school. Planning and equipping library quarters, purpose of the library in the school, standards, instruction in the use of books and libraries, training student assistants, acquisition of materials, repair of books, publicity, exhibits, and other practical problems.

*L. S. 102S. Cataloging and Classification. (3)*

No prerequisite. Study and practice in classifying books and making dictionary catalog

for school libraries. Study of simplified forms as used in the Children's Catalog, Standard Catalog for High School Libraries, and Wilson printed cards.

*L. S. 103S. Book Selection for School Libraries. (3)*

No prerequisite. Principles of book selection as applied to school libraries. Practice in the effective use of book selection aids in the preparation of book lists. Evaluating of publishers, editions, translations, format, etc.

*L. S. 104S. Reference and Bibliography for School Libraries. (4)*

No prerequisite. Evaluation, selection, and use of standard tools, such as encyclopedias, dictionaries, periodical indexes, atlases, and yearbooks for school libraries. Study of bibliographical procedures and forms.

*L. S. 111. Introduction to Fundamentals of Special Library Service. (3)*

No prerequisite. An introductory course of library methods as applied to an organization in which the primary function of the library is bibliographic control of material pertinent to the specialized field of the organization. A course planned to train in general library methods a person who already is a specialist in some particular phase of library service.

## MATHEMATICS

*Professor and Head:* COHEN.

*Professors:* DIAZ\*, DOUGLIS, FULLERTON, JACKSON, MARTIN, MAYOR (P.T.), AND STELLMACHER.

*Research Professor:* WEINSTEIN\*.

*Associate Professors:* BRACE, GOOD AND LUDFORD\*.

*Research Associate Professors:* PAYNE\* AND WEINBERGER\*.

*Assistant Professors:* CORREL, EHRLICH, HORVATH, HUMMEL, PEARL, REINHART (P.T.), RIEGER, ROSEN AND ZEDEK.

*Instructors:* BREWSTER, DYER, FUSARO, HENNEY, JONES, KARP, LEHNER, LEPSON, MAC CARTHY, MAR, MC CLAY, SEDGEWICK, SHEPHERD, VANDERSLICE (P.T.) AND ZEMEL.

*Lecturers:* GARSTENS (P.T.), KEEDY (P.T.), AND SINKOV (P.T.)

The Mathematics Department Colloquium meets frequently throughout the academic year for reports on current research by the resident staff, visiting lecturers, and graduate students. In addition the Institute for Fluid Dynamics and Applied Mathematics Colloquium meets at frequent intervals for reports on research in those fields. All colloquium meetings are open to the public.

The local chapter of Pi Mu Epsilon, national honorary mathematics fraternity, under the guidance of the faculty adviser, Dr. MacCarthy, meets regularly for the discussion of mathematical topics of interest to the undergraduate. The programs are open to the public.

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\*Member of the Institute for Fluid Dynamics and Applied Mathematics.



The following courses are open to students who offer at least one unit of algebra for entrance: Math. 1, 5, or 10.

The following course is open to students who offer two or more units of algebra for entrance: Math. 18.

Students are enrolled in Math. 5, 10, or 18 provided they pass the mathematics section of the general classification test given to incoming students during registration. Students who fail this test should enroll in Math. 0 if their curriculum calls for Math. 5 or 10, and in Math. 1 if their curriculum calls for Math. 18.

In general students should enroll in only one of the course sequences, Math. 5, 10-11, 18-19. In case this rule is not followed, proper assignment of credit will be made upon application to the Department of Mathematics. The following are listed as typical situations:

Math. 5, 10, 18. Credit in only one course: the one enrolled in latest.

Math. 11, 18. Math. 11—2 credits; Math. 18—5 credits.

*Math. 0. Basic Mathematics. (0)*

First and second semesters. Recommended for students whose curriculum calls for Math. 5 or 10 and who fail the qualifying examinations for these courses. Special fee, \$30. The fundamental principles of algebra. (Henney, Staff.)

*Math. 1. Introductory Algebra. (0)*

First and second semesters. Prerequisite, one unit of algebra. Recommended for students whose curriculum calls for Math. 18 and who fail the qualifying examination for this course. Special fee, \$30. A review of the topics covered in a second course in algebra. (Henney, Staff.)

*Math. 2. Solid Geometry. (0)*

Prerequisite, one unit each of algebra and plane geometry. Open to students who enter deficient in solid geometry. Students in the College of Education may be granted two credits for Math. 2. Lines, planes, cylinders, cones, the sphere and polyhedra, primary emphasis on mensuration. Intended for engineers and science students. (Brewster, Staff.)

*Math. 3. Fundamentals of Mathematics. (4)*

First and second semesters. This course is open to all students and is designed to give an introduction to mathematical thinking. Content: logical structure for several elementary mathematical systems, historical advances in typical phases of mathematics and their role in world development, famous unsolvable problems, currently unsolved problems, applications of mathematics to other fields of learning. (Douglass, Staff.)

*Math. 5. Business Algebra. (3)*

First and second semesters. Summer session. Prerequisite, one unit of algebra. Open only to students in the College of Business and Public Administration, the College of Agriculture, the Department of Air Science, and the Department of Industrial Education. Note regulation above in case student enrolls in more than one of the courses,

Math. 5, 10, 18. Fundamental operations, fractions, ratio and proportion, linear equations, exponents, logarithms, percentage, trade discount, simple interest, bank discount, true discount, and promissory notes. (Shepherd, Staff.)

*Math. 6. Mathematics of Finance. (3)*

First and second semesters. Summer session. Prerequisite, Math. 5 or equivalent. Required of students in the College of Business and Public Administration, and open to students in the College of Arts and Sciences only for elective credit. Line diagrams, compound interest, simple interest, ordinary annuities, general annuities, deferred annuities, annuities due, perpetuities, evaluation of bonds, amortization, and sinking funds. (Shepherd, Staff.)

*Math. 10. Algebra. (3)*

First and second semesters. Summer session. Prerequisite, one unit each of algebra and plane geometry. Open to biological, pre-medical, pre-dental, and general Arts and Sciences students. Note regulation above, in case student enrolls in more than one of the courses, Math. 5, 10, 18. Fundamental operations, factoring, fractions, linear equations, exponents and radicals, quadratic equations, progressions, logarithms, permutations and combinations, probability, mathematics of investment. (Horvath, Staff.)

*Math. 11. Trigonometry and Analytic Geometry. (3)*

First and second semesters. Summer session. Prerequisite, Math. 10 or equivalent. Open to biological, pre-medical, pre-dental, and general Arts and Sciences students. This course is not recommended for students planning to enroll in Math. 20. Note regulation above, in case student enrolls in more than one sequence, Math. 10-11, 18-19, Trigonometric functions, identities, addition formulas, solution of triangles, coordinates, locus problems, the straight line and circle, conic sections, graphs.

(Horvath, Staff.)

*Math. 13. Elements of Mathematical Statistics. (3)*

Second semester. Prerequisite, Math. 10 or equivalent. Frequency distributions, averages, moments, measures of dispersion, the normal curve, curve fitting, regression and correlation. (Good.)

*Math. 18, 19. Elementary Mathematical Analysis. (5, 5)*

First and second semesters. Summer session. Prerequisites, high school algebra completed and plane geometry. Open to students in the physical sciences, engineering, and education. Note regulation above, in case student enrolls in more than one of the course sequences, Math. 5, 10-11, 18-19. The elementary mathematical functions, composed of algebraic, exponential, trigonometric types and their inverses, are studied by means of their properties, their graphical representations, the identities interconnecting them, the solution of equations involving them. The beginning techniques of calculus are included. Other material may be selected from such topics as permutations, combinations, probability, statistics, determinants, vectors, matrices, and solid analytic geometry. (Horvath, Staff.)

*Math. 20, 21. Calculus. (4, 4)*

First and second semesters. Summer session. Three lectures and two one-hour drill periods a week. Prerequisite, Math. 19 or equivalent. Open to students in engineering, education, and the physical sciences. Limits, derivatives, differentials, maxima and minima, curve sketching, rates, curvature, kinematics, integration with geometric

and physical applications, partial derivatives, space geometry, multiple integrals, infinite series. (Horvath, Staff.)

*Math. 64. Differential Equations for Engineers. (3)*

First and second semesters. Summer session. Prerequisite, Math. 21 or equivalent. Required of students in mechanical and electrical engineering. Differential equations of the first and second order with emphasis on their engineering applications. (Horvath, Staff.)

*For Advanced Undergraduates and Graduates*

ALGEBRA

*Math. 100. Higher Algebra. (3)*

First semester. Prerequisite, Math. 21 or equivalent. The algebra of vector spaces and matrices, with emphasis upon those aspects of interest to students in applied mathematics. (Good.)

*Math. 103, 104. Introduction to Modern Algebra. (3, 3)*

Prerequisite, Math. 21 or equivalent. For Math. 104, the usual prerequisite of Math. 103 may be waived upon consent of instructor. In Math. 103 are studied the basic concepts of abstract algebra: integral domains, divisibility, congruences; fields, ordered fields; the fields of rational numbers, of real numbers, of complex numbers; polynomial domains over a field, including classical results on the theory of polynomial equations with rational, real, or complex coefficients; unique factorization domains, irreducibility criteria; rings. In Math. 104 are studied groups, vector spaces, linear transformations, matrices. (Rieger.)

*Math. 106. Introduction to the Theory of Numbers. (3)*

Summer session (2). Prerequisite, Math. 21 or equivalent. Integers, divisibility, Euclid's algorithm, Diophantine equations, prime numbers, Moebius function, congruences, residues. (Good.)

*For Graduates*

*Math. 200, 201. Modern Algebra. (3, 3)*

Prerequisite, Math. 103 or consent of instructor. Groups, rings, fields, vectors and matrices, linear transformations, linear dependence, rank, canonical forms. (Ehrlich.)

*Math. 202. Linear Algebra. (3)*

Prerequisite, Math. 201 or consent of instructor. Linear manifolds, the lattice of subspaces, projectivities, dualities, the ring of endomorphisms, the full linear group and its subgroups. (Pearl.)

*Math. 203. Galois Theory. (3)*

Prerequisite, Math. 201 or consent of instructor. Field extensions, automorphisms of a field, the Galois group of a polynomial equation, solvability by radicals, recent developments in Galois theory. (Good.)

*Math. 204, 205. Topological Groups. (3, 3)*

Prerequisite, consent of instructor. An introductory course in abstract groups, topological spaces, and the study of collections of elements enjoying both these properties. The concept of a uniform space will be introduced and studied. The representation problem will be considered together with the subject of Lie groups. (Good.)

*Math. 206. Number Theory. (3)*

Prerequisite, consent of instructor. Foundations, linear and higher congruences, law of reciprocity, quadratic forms, sieve methods, elements of additive number theory and density, distribution of prime numbers and L-functions, discussion of unsolved problems. (Rieger.)

*Math. 208. Ring Theory. (3)*

Prerequisite, Math. 201 or consent of instructor. According to the needs of the class, emphasis will be placed on one or more of the following: ideal theory, structure theory of rings with or without minimum condition, division rings, algebras, nonassociative rings. (Ehrlich.)

*Math. 209. Group Theory. (3)*

Prerequisite, Math. 201 or consent of instructor. According to the needs of the class, emphasis will be placed on one or more of the following aspects of discrete group theory: finite groups, abelian groups, free groups, solvable or nilpotent groups, groups with operators, groups with local properties, groups with chain conditions, extensions. (Pearl.)

*Math. 271. Selected Topics in Algebra. (3)*

(Arranged.) Prerequisite, consent of instructor.

## ANALYSIS

*For Advanced Undergraduates and Graduates**Math. 110, 111. Advanced Calculus. (3, 3)*

Prerequisite, Math. 21 or equivalent. Limits and continuity of real and complex functions, Riemann integration, partial differentiation, line and surface integrals, infinite series, elements of vector analysis, elements of complex variable theory. Emphasis on problems and techniques. (Correl.)

*Math. 114. Differential Equations. (3)*

Second semester. Prerequisite, Math. 110 or equivalent. Ordinary differential equations, symbolic methods, successive approximations, solutions in series, orthogonal functions, Bessel functions, Sturmian theory. (Stellmacher.)

*Math. 115. Partial Differential Equations. (3)*

Prerequisite, Math. 114. Partial differential equations of first and second order, characteristics, boundary value problems, systems of equations, applications. (Martin.)

*Math. 116. Introduction to Complex Variable Theory. (3)*

Prerequisite, Math. 21 or equivalent. Open to students in engineering and the physical sciences. Graduate students in mathematics should enroll in Math. 286. Fundamental operations in complex numbers, differentiation and integration, sequences and series, power series, analytic functions, conformal mapping, residue theory, special functions. (MacCarthy.)

*Math. 117. Fourier Series. (3)*

Prerequisite, Math. 114 or equivalent. Representation of functions by series of orthogonal functions. Applications to the solution of boundary value problems of some partial differential equations of physics and engineering. (Ludford.)



## For Graduates

### *Math. 212. Special Functions. (3)*

Second semester. Prerequisite, Math. 287 or consent of instructor. Gamma function; second order differential equations in the complex domain, regular and irregular singularities; hypergeometric functions, Riemann's P- functions, Legendre functions, confluent hypergeometric functions, Whittaker functions, Bessel functions. (Diaz.)

### *Math. 215, 216. Advanced Differential Equations. (3, 3)*

Prerequisites, Math. 100 and 111 and 114, or consent of instructor. Existence and uniqueness theorems for systems of ordinary differential equations and for partial differential equations, characteristic theory, reduction to normal forms, the methods of finite differences. (Horvath.)

### *Math. 218. Integral Equations. (3)*

First semester. Prerequisites, Math. 100 and 287, or consent of instructor. Integral equations of the first and second kind, Volterra's equation, Abel's equation and fractional differentiation; the Fredholm theory, the Hilbert-Schmidt theory, Mercer's theorem, expansion in orthonormal series; existence theorems of potential theory and other applications. (Douglas.)

### *Math. 272. Selected Topics in Analysis. (3)*

(Arranged). Prerequisite, consent of instructor.

### *Math. 278. Advanced Topics in Complex Analysis. (3)*

Prerequisite, Math. 288 or consent of instructor. Material selected to suit interests and background of the students. Typical topics: conformal mapping, algebraic functions, Riemann surfaces, entire functions, Dirichlet series, Taylor's series, geometric function theory. (Hummel.)

### *Math. 280, 281. Linear Spaces. (3, 3)*

Prerequisite, Math. 287 or equivalent. Linear vector spaces and their topologies, linear operations and transformations and their inverses, Banach and Hilbert spaces. (Fullerton.)

### *Math. 286, 287. Theory of Functions. (3, 3)*

Prerequisite, Math. 111 or equivalent. Basic topics in real and complex variable theory, real and complex number systems, point sets on the line and in space, continuity, Riemann and Stieltjes integrals, Cauchy integral theorem, residues, power series, analytic functions, introduction to Lebesgue measure and integration. (Zedek.)

### *Math. 288. Theory of Analytic Functions. (3)*

First semester. Prerequisite, Math. 287 or a course in complex variables. Advanced topics in complex function theory, properties of power series, entire functions, conformal mapping, classification of singularities, harmonic functions. (Hummel.)

### *Math. 289. Measure and Integration. (3)*

Second semester. Prerequisite, Math. 287 or a course in real variables. Set functions, abstract theory of measure, differentiability properties and absolute continuity of set functions, measurable functions, abstract integration theory, introduction to linear spaces. (Rosen.)



## GEOMETRY AND TOPOLOGY

*For Advanced Undergraduates and Graduates**Math. 122, 123. Elementary Topology. (3, 3)*

Prerequisite, Math. 21 or equivalent. Open and closed sets, elementary topology of the straight line and the Euclidean plane, the Jordan Curve Theorem and its application, simple connectivity. (Correl.)

*Math. 124, 125. Introduction to Projective Geometry. (3, 3)*

Prerequisite, Math. 21 or equivalent. Elementary projective geometry largely from the analytic approach, projective transformations, cross ratio, harmonic division, projective coordinates, projective theory of conics, Laguerre's definition of angle. (Mayor.)

*Math. 126, 127. Introduction to Differential Geometry and Tensor Analysis. (3, 3)*

Prerequisite, Math. 21 or equivalent. The differential geometry of curves and surfaces with the use of vector and tensor methods, curvature and torsion, moving frames, curvilinear coordinates, the fundamental differential forms, covariant derivatives, intrinsic geometry, curves on a surface, applications to problems in dynamics, mechanics, electricity, and relativity. (MacCarthy.)

*Math. 128, 129. Higher Geometry. (3, 3)*

Prerequisite, Math. 21 or consent of instructor. Math. 128 is not a prerequisite for Math. 129. Open to students in the College of Education. This course is designed for students preparing to teach geometry in high school. The first semester is devoted to the modern geometry of the triangle, circle and sphere. In the second semester emphasis is placed on the axiomatic development of Euclidean and non-Euclidean geometry. (Mayor.)

*For Graduates**Math. 220, 221. Differential Geometry. (3, 3)*

Prerequisites, Math. 111 and 152, or consent of instructor. Curves and surfaces, geometry in the large, the Gauss-Bonnet formula, surfaces of constant curvature. (Jackson.)

*Math. 223, 224. Algebraic Topology. (3, 3)*

Prerequisites, Math. 103 and 123, or consent of instructor. Homology, cohomology, and homotopy theory of complexes and spaces. (Reinhart.)

*Math. 225, 226. Set-theoretic Topology. (3, 3)*

Prerequisite, Math. 123 or consent of instructor. Foundations of mathematics based on a set of axioms, metric spaces, convergence and connectivity properties of point sets, continua and continuous curves, the topology of the plane. (Lehner.)

*Math. 273. Selected Topics in Geometry and Topology. (3)*

(Arranged). Prerequisite, consent of instructor.

## PROBABILITY AND STATISTICS

*For Advanced Undergraduates and Graduates**Math. 130. Probability. (3)*

First semester. Prerequisite, Math. 21 or equivalent. Combinatory analysis, total, com-

## Mathematics

pound, and inverse probability, continuous distributions, theorems of Bernoulli and Laplace, theory of errors. (Karp.)

### *Math. 132. Mathematical Statistics. (3)*

Second semester. Prerequisite, Math. 21 or equivalent. Frequency distributions and their parameters, multivariate analysis and correlation, theory of sampling, analysis of variance, statistical inference. (Karp.)

### *Math. 133. Advanced Statistical Analysis. (3)*

Second semester. Prerequisite, Math. 132 or equivalent. Advanced methods in correlation analysis, regression analysis, analysis of variance and sequential analysis, curve fitting, testing of hypotheses, non-parametric testing, machine tabulation in statistics. (Staff.)

## HISTORY AND FOUNDATIONS

### *For Advanced Undergraduates and Graduates*

### *Math. 140. History of Mathematics. (3)*

Summer Session (2). Prerequisite, Math. 21 or consent of instructor. A survey of the historical development of mathematics and of the mathematicians who have contributed to that development. (Jackson.)

### *Math. 146. Fundamental Concepts of Mathematics. (3)*

Prerequisite, Math. 21 or consent of instructor. Construction of the number system starting with the Peano axioms for the natural numbers, developments of the algebraic structures associated with the integers and rationals, theory of sets, equivalence classes, order relations, finite and infinite cardinals, positions of the various number systems in the hierarchy of order types. (Karp.)

### *For Graduates*

### *Math. 244. Mathematical Logic. (3)*

Prerequisite, consent of instructor. Propositional calculus, predicate calculus and relations; formal deduction, the deduction theorem and the decision problem. (Keedy.)

## MATHEMATICAL METHODS

### *For Advanced Undergraduates and Graduates*

### *Math. 150, 151. Advanced Mathematics for Engineers and Physicists. (3, 3)*

Prerequisite, Math. 21 or equivalent. An introduction to advanced mathematical methods and their application to the technical problems of physics and engineering. Topics include Fourier series, matrices, ordinary and partial differential equations of applied mathematics, numerical methods, Bessel functions, complex variables, operational calculus. (Sedgewick.)

### *Math. 152. Vector Analysis. (3)*

Prerequisite, Math. 21 or equivalent. Algebra and calculus of vectors and applications. (Sedgewick.)

*Math. 153. Operational Calculus. (3)*

Second semester. Prerequisite, Math. 21 or equivalent. Operational solutions of ordinary and partial differential equations, Fourier and Laplace transforms. (Sedgewick.)

*Math. 155. Numerical Analysis. (3)*

First semester. Prerequisites, Math. 110 and 114, or consent of instructor. A brief survey of computing machines, study of errors involved in numerical computations, the use of desk machines and tables, numerical solution of polynomial and transcendental equations, interpolation, numerical differentiation and integration, ordinary differential equations, systems of linear equations. (Good.)

*Math. 156. Programming for High Speed Computers. (3)*

First and second semesters. Prerequisite, Math. 21 or equivalent. General characteristics of high-speed automatic computers; logic of programming, preparation of flow charts, preliminary and final coding; scaling, use of floating point routines; construction and use of subroutines; use of machine for mathematical operations and for automatic coding. Each student will prepare and, if possible, run a problem on a high speed computer. (Sinkov.)

### For Graduates

*Math. 250. Tensor Analysis. (3)*

First semester. Prerequisites, Math. 100 and 152, or consent of instructor. Algebra and calculus of tensors, Riemannian geometry and its extensions, differential invariants; applications to physics and engineering, and in particular the theory of relativity. (Stellmacher.)

*Math. 251. Hilbert Space. (3)*

Second semester. Prerequisites, Math. 100 and 287, or consent of instructor. The original and general Hilbert space, scalar product, metric, strong and weak convergence, linear functionals, symmetric operators, complete continuity, eigenvalues, orthonormal systems, Schwartz-Bessel inequality and Parseval identity, eigenvalues in subspaces, spectral theorem. (Weinstein.)

*Math. 252. Variational Methods. (3)*

Second semester. Prerequisite, Math. 260 or consent of instructor. The Euler-Lagrange equation, minimal principles in mathematical physics, estimation of capacity, torsional rigidity and other physical quantities; symmetrisation, isoperimetric inequalities, estimation of eigenvalues; the minimax principle. (Payne.)

*Math. 255, 256. Advanced Numerical Analysis. (3, 3)*

Prerequisites, Math. 100 and 155, or consent of instructor. Review of numerical differentiation and integration, solution of ordinary differential equations, stability, accuracy, use of high-speed digital machines, properties of elliptic, hyperbolic and parabolic partial differential equations, conversion of partial differential equations to partial difference equations, stability and convergence of methods for solving partial difference equations, rates of convergence of relaxation methods, gradient methods, iterative methods, the method of characteristics. General methods of solving problems, existence and uniqueness theorems for difference equations associate with partial differential equations, stability of solutions, perturbation, iterative procedures, steepest descent, eigenvalue problems. (Staff.)

MATHEMATICAL PHYSICS

*For Advanced Undergraduates and Graduates*

*Math. 160, 161. Analytic Mechanics. (3, 3)*

Prerequisite, Math. 21 or equivalent. Statics, kinematics, dynamics of a particle, elementary celestial mechanics, Lagrangian equations for dynamical systems of one, two, and three degrees of freedom, Hamilton's principle, the Hamilton-Jacobi partial differential equation. (Martin.)

*For Graduates*

*Math. 260. Foundations of Mathematical Physics. (3)*

First semester. Prerequisite, consent of instructor. General survey of mathematical methods and results employed in various branches of mathematical physics. The following are among the general topics to be discussed: vector analysis and integral identities (Green-Gauss, Stokes, etc.), ordinary and partial differential and difference equations, integral equations, formulation of typical boundary and initial value problems and indication of the main methods of solution. (Diaz.)

*Math. 261, 262. Fluid Dynamics. (3, 3)*

Prerequisite, Math. 260 or consent of instructor. Basic kinematic and dynamic concepts, equation of continuity, velocity, potential and stream function, vorticity, Bernoulli's equation; perfect incompressible fluids, Helmholtz' vorticity theorems, plane hydrodynamics, Kutta-Joukowski theory of lift, conformal mapping, vortices and vortex streets, Prandtl-Munk theory of finite wings; viscous fluids, Navier-Stokes equations, boundary layer theory; perfect gases, method of characteristics, subsonic, transonic, and supersonic flows, hodograph method, theory of shock waves. (Ludford.)

*Math. 263, 264. Elasticity. (3, 3)*

Prerequisites, Math. 100 and 260, or consent of instructor. Stress and strain, nuclei of strain, compatibility equations, Saint-Venant principle, bending, torsion and flexure of beams, complex variable methods, Airy's stress function, axial symmetry, strain energy and potential energy, buckling, bending, and vibration of plates and shells. (Payne.)

*Math. 265. Hyperbolic Differential Equations. (3)*

First semester. Prerequisite, Math. 260 or consent of instructor. Two variables, Cauchy's problem, characteristics, Riemann's method, properties of the Riemann function, quasi-linear equations and canonical hyperbolic systems, wave equation in  $n$ -dimensions, methods of Hadamard and Riesz, Euler-Poisson equation and the singular problems, Huygens' principle. (Douglass.)

*Math. 266. Elliptic Differential Equations. (3)*

Second semester. Prerequisite, Math. 260 or consent of instructor. The equations of Laplace and Poisson, flux, the theorems of Gauss and Green, potentials of volume and surface distributions, harmonic functions, Green's function and the problems of Dirichlet and Neumann; linear elliptic equations with variable coefficients, in particular the equations of Stokes and Beltrami; fundamental solutions, the principle of the maximum, and boundary value problems; introduction to the theory of non-linear equations. (Douglass.)



*Math. 274. Selected Topics in Applied Mathematics. (3)*

(Arranged.) Prerequisite, consent of instructor.

## FOR TEACHERS OF MATHEMATICS AND SCIENCE

*For Advanced Undergraduates and Graduates**Math. 181. Foundations of Number Theory. (3)*

Summer session. Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. Axiomatic development of the real numbers. Elementary number theory. (Jackson.)

*Math. 182. Foundations of Algebra. (3)*

Summer session. Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. Modern ideas in algebra and topics in the theory of equations. (Cohen.)

*Math. 183. Foundations of Geometry. (3)*

Summer session. Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. A study of the axioms for Euclidean and non-Euclidean geometry. (Jackson.)

*Math. 184. Foundations of Analysis. (3)*

Summer session. Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. A study of the limit concept and the calculus. (Previous knowledge of calculus is not required.) (Good.)

*Math. 199. National Science Foundation Summer Institute for Teachers of Science and Mathematics. Seminar. (1-3)*

Laboratory fee, \$5.00. Lectures and discussions to broaden and deepen the student's appreciation for mathematics as a logical discipline and medium of expression. Special emphasis on topics relevant to current curriculum studies and revisions. (Staff.)

## RESEARCH

*For Advanced Undergraduates and Graduates**Math. 190, 191. Honors Reading Course. (3, 3)*

Prerequisite, permission by the Department to work for honors. Selected reading on topics in mathematics of special interest to the student under the guidance of a staff member. (Cohen.)



## For Graduates

*Math. 298. Proseminar in Research. (1)*

Second semester. Prerequisite, one semester of graduate work in mathematics. A seminar devoted to the foundations of mathematics, including mathematical logic, axiom systems, and set theory. (Douglass.)

*Math. 399. Research.*

(Arranged.)

## ASTRONOMY

*Astr. 1, 2. Astronomy. (3, 3)*

An elementary course in descriptive astronomy.

## MICROBIOLOGY

*Professor and Head: FABER.*

*Professors: HANSEN AND PELCZAR.*

*Visiting Professor: GORDON.*

*Associate Professors: LAFFER AND DOETSCH.*

*Lecturer: STADTMAN.*

*Microb. 1. General Microbiology. (4)*

First and second semesters. Summer session. Two lectures and two two-hour laboratory periods a week. Laboratory fee, \$11.00. The physiology, culture and differentiation of microorganisms. Fundamental principles of microbiology in relation to man and his environment. (Pelczar.)

*Microb. 5. Advanced General Microbiology. (4)*

Second semester. Summer session. Two lectures and two two-hour laboratory periods a week. Prerequisites, Microb. 1 and Chem. 3. Laboratory fee, \$11.00. Emphasis will be given to the fundamental procedures and techniques used in the field of microbiology. Lectures will consist of the explanation of various procedures. (Laffer.)

*Microb. 51. Household Microbiology. (3)*

Second semester. Two lecture and one two-hour laboratory periods a week. For home economics students only. Laboratory fee, \$11.00. Morphology and physiology of the bacteria, yeasts, and molds. Application of the effect of chemical and physical agents in the control of microbial growth. Relationship of microbiology to home sanitation, food preservation and manufacture; personal and community hygiene. (Pelczar.)

*Microb. 60, 62. Microbiological Literature. (1, 1)*

First and second semesters. One lecture period a week. Prerequisite, a major in microbiology with junior standing. Introduction to periodical literature, methods, interpretation and presentation of reports. (Doetsch.)

## For Advanced Undergraduates and Graduates

*Microb. 101. Pathogenic Microbiology. (4)*

First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Microb. 5. Laboratory fee, \$11.00. The role of microorganisms in the diseases of man and animals with emphasis upon the differentiation and culture of microorganisms, types of disease, modes of disease transmission, prophylactic, therapeutic and epidemiological aspects. (Faber.)

*Microb. 103. Serology. (4)*

Second semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Microb. 101. Laboratory fee, \$11.00. Infection and resistance; principles and types of immunity; hypersensitiveness. Fundamental techniques of major diagnostic immunological reactions and their application. (Faber.)

*Microb. 104. History of Microbiology. (1)*

First semester. One lecture period a week. Prerequisite, a major or minor in microbiology. History and integration of the fundamental discoveries of the science. The modern aspects of cytology, taxonomy, fermentation, and immunity in relation to early theories. (Doetsch.)

*Microb. 105. Clinical Methods. (4)*

First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, consent of instructor. Laboratory fee, \$11.00. A practical course designed to integrate clinical laboratory procedures in terms of hospital and public health demands. (Faber.)

*Microb. 108. Epidemiology and Public Health. (2)*

Second semester. Two lecture periods a week. Prerequisite, Microb. 1. History, characteristic features, and epidemiology of the important communicable diseases, public health administration and responsibilities; vital statistics. (Faber.)

*Microb. 121. Advanced Methods. (4)*

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, consent of instructor. Laboratory fee, \$11.00. The application of quantitative techniques for measurement of enzyme reactions, mutations, fermentation analyses, and other physiological processes of microorganisms. (Hansen, Pelczar.)

*Microb. 131. Food and Sanitary Microbiology. (4)*

Second semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Microb. 1. Laboratory fee, \$11.00. The relationship of microorganisms to fresh and preserved food and methods of control. Bacteriological and public health aspects of water supplies and sewage disposal, restaurant and plant sanitation, insect and rodent control. (Laffer.)

*Microb. 133. Dairy Microbiology. (4)*

First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Microb. 1. Laboratory fee, \$11.00. Relation of bacteria, yeasts, and molds to milk, cream, butter, ice cream, cheese, and other dairy products. Standard methods of examination, public health, requirements, plant sanitation. Occasional inspection trips. (Doetsch.)

*Microb. 135. Soil Microbiology. (4)*

Second semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, Microb. 1. Laboratory fee, \$11.00. The role played by microorganisms in the soil; nitrification, denitrification, nitrogen-fixation, and decomposition processes; cycles of elements; relationships of microorganisms to soil fertility. (Hansen.)

*Microb. 150. Microbial Physiology. (2)*

Second semester. Two lecture periods a week. Prerequisite, 8 credits in microbiology. Aspects of the growth, death, and energy transactions of microorganisms are considered, as well as the effects of the physical and chemical environment on them. (Doetsch.)

*Microb. 161. Systematic Bacteriology. (2)*

First semester. Two lecture periods a week. Prerequisite, 8 credits in microbiology. History of bacterial classification; genetic relationships; international codes of nomenclature; bacterial variation as it affects classification. (Hansen.)

*Microb. 181. Microbiological Problems. (3)*

First and second semesters. Summer session. Prerequisite, 16 credits in microbiology. Registration only upon the consent of the instructor. Laboratory fee, \$11.00. This course is arranged to provide qualified majors in microbiology and majors in allied fields an opportunity to pursue specific microbiological problems under the supervision of a member of the Department. (Faber.)

*For Graduates*

*Microb. 201. Medical Mycology. (4)*

First semester. Two lecture and two two-hour laboratory periods a week. Prerequisite, 30 credits in microbiology and allied fields. Laboratory fee, \$11.00. Primarily a study of the fungi associated with disease and practice in the methods of isolation and identification. (Laffer.)

*Microb. 202. Genetics of Microorganisms. (2)*

Second semester. Two lecture periods a week. Prerequisite, consent of instructor. An introduction to genetic principles and methodology applicable to microorganisms. Spontaneous and induced mutations, interaction between clones. (Hansen.)

*Microb. 204. Bacterial Metabolism. (2)*

First semester. Two lecture periods a week. Prerequisite, 30 credits in microbiology and allied fields, including Chem. 161 and 162. Bacterial nutrition, enzyme formation, metabolic pathways and the dissimilation of carbon and nitrogen substrates. (Pelczar.)

*Microb. 206, 208. Special Topics. (1, 1)*

First and second semesters. One lecture period a week. Prerequisite, 20 credits in microbiology. Presentation and discussion of fundamental problems and special subjects in the field of microbiology. (Staff.)

*Microb. 210. Virology and Tissue Culture. (2)*

Second semester. Two lecture periods a week. Prerequisite, Microb. 101 or equivalent. Characteristics and general properties of viruses and rickettsiae. Principles of tissue culture. (Gordon.)

*Microb. 211. Virology and Tissue Culture Laboratory. (2)*

Second semester. Two three-hour laboratory periods a week. Prerequisite, Microb. 101 or equivalent. Registration only upon consent of instructor. Laboratory fee, \$20.00. Laboratory methods in virology and tissue culture. (Gordon.)

*Microb. 214. Advanced Bacterial Metabolism. (1)*

Second semester. One lecture period a week. Prerequisite, Microb. 204 and consent of instructor. A discussion of recent advances in the field of bacterial metabolism with emphasis on metabolic pathways of microorganisms. (Pelczar.)

*Microb. 280. Seminar-Research Methods. (1)*

First semester. Discussions and reports prepared by majors in microbiology engaged in current research; presentation of selected subjects dealing with recent advances in microbiology. (Staff.)

*Microb. 282. Seminar-Microbiological Literature. (1)*

Second semester. Presentation and discussion of current literature in microbiology. (Staff.)

*Microb. 399. Research.*

First and second semesters. Summer session. Credits according to work done. Laboratory fee, \$11.00. The investigation is outlined in consultation with and pursued under the supervision of a senior staff member of the Department. (Staff.)

## MUSIC

*Professor and Head:* ULRICH.

*Professors:* GRENTZER AND RANDALL.

*Associate Professors:* JORDAN AND SPRINGMANN.

*Assistant Professors:* BERMAN, HENDERSON, HENKE AND MEYER.

*Instructors:* BERNSTEIN, DE VERMOND, GORDON AND TRAVER.

*Music 1. Introduction to Music. (3)*

Second semester. Open only to music or music education majors; other students take Music 20. Music 1 and 20 may not both be counted for credit. Three lectures per week. A study of the forms and styles of music, leading to an intelligent appreciation of the art and providing a foundation for more advanced courses in the Department of Music. (Ulrich.)

*Music 4. Men's Glee Club. (1)*

First and second semesters. Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters. (Traver.)

*Music 5. Women's Chorus. (1)*

First and second semesters. Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters. (Traver.)



*Music 6. Orchestra. (1)*

First and second semesters. Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters. (Berman.)

*Music 7, 8. Theory of Music. (3, 3)*

First and second semesters. Two lectures and three laboratory hours per week. A fundamental course in the elements of music. Study of rhythms, scales, chord structures, and tonalities through ear training, sight singing, and keyboard drill. The student must achieve a grade of "C" in Music 8 in order to register for Music 70. (Staff.)

*Music 9. Chamber Music Ensemble. (1)*

First and second semesters. This course does not fulfill the ensemble requirements of the various curricula. Three laboratory hours per week. Rehearsal and performance of selected works for small ensembles of strings, winds, and piano or small vocal ensembles. May be repeated for credit; the music studied will cover a cycle of about six semesters. (Grentzer, Berman.)

*Music 10. Band. (1)*

First and second semesters. Open to any student who can qualify. May be taken until a total of six semester hours of credit has been earned; the music studied will cover a cycle of about six semesters. (Henderson.)

*Music 15. Chapel Choir. (1)*

First and second semesters. Summer session. Open to all students in the University, subject to the Director's approval. The Choir will appear at services held in the Memorial Chapel. May be taken until a total of six semester hours of credit has been earned. (Springmann.)

*Music 16. Music Fundamentals for the Classroom Teacher. (3)*

First and second semesters. Open to students majoring in elementary education or childhood education; other students take Music 7. Music 7 and 16 may not both be counted for credit. The fundamentals of music theory and practice, related to the needs of the classroom and kindergarten teacher, and organized in accord with the six-area concept of musical learning. (Traver.)

*Music 20. Survey of Music Literature. (3)*

First and second semesters. Three lectures per week. Open to all students except music and music education majors, and may be taken by students who qualify to select courses within Group II of the American Civilization Program. Music 1 and 20 may not both be taken for credit. A study of the principles upon which music is based, and an introduction to the musical repertoires performed in America today. (Jordan.)

*Music 21, 22. Class Voice. (2, 2)*

First and second semesters. Four hours per week. A laboratory course in which a variety of voices and vocal problems are represented. Principles of correct breathing as applied to singing; fundamentals of tone production and diction. Students are taught to develop their own voices. Repertoire of folk songs and songs of the Classical and Romantic periods. (Randall.)



*Music 23, 24. Class Piano. (2, 2)*

First and second semesters. Four hours per week. Functional piano training for beginners. Development of techniques useful for school and community playing. Basic piano techniques; chord, arpeggio, and scale techniques; melody and song playing; simple accompaniments, improvisation for accomplishments and rhythms; sight reading and transposition, and playing by ear. Music 24, continuation of Music 23; elementary repertoire is begun. (de Vermond.)

*Music 31, 32. Advanced Class Voice. (2, 2)*

First and second semesters. Four hours per week. Prerequisite, Music 22 or equivalent vocal training. Continuation of Music 22, with more advanced repertoire for solo voice and small ensembles. A special section for music-education majors will include the study of methods and materials for teaching class voice. (Henke.)

*Music 33, 34. Advanced Class Piano. (2, 2)*

First and second semesters. Prerequisite, Music 24 or equivalent piano training. Four hours per week. Advanced keyboard techniques. Continuation of skills introduced in Music 24; transposition, modulation, and sight reading; methods of teaching functional piano. Music 34, development of style in playing accompaniments and in playing for community singing. More advanced repertoire. (de Vermond.)

*Music 70, 71. Advanced Theory of Music. (4, 4)*

First and second semesters. Prerequisite, Music 8 with a grade of at least "C". Three lectures and two laboratory hours per week. An integrated course of written harmony, keyboard harmony, and ear training. Continuation of the principles studied in Music 8. Harmonic progressions; Music 70, eighteenth century chorale style; Music 71, nineteenth century styles including chromatic and modulatory techniques. Realization of figured basses, and composition in the smaller forms. Advanced study of solfege, with drill in melodic, rhythmic, and harmonic dictation. Application of harmonic principles to the keyboard. (Bernstein, Staff.)

*Music 80, 82. Class Study of String Instruments. (2, 2)*

First and second semesters. Four laboratory hours per week. Fundamental bowings, technical problems, vibrato, and a study of ensemble materials. Music 80, violin and viola; Music 82, cello and bass, and a continuation of violin. (Berman.)

*Music 81, 83. Class Study of Wind Instruments. (2, 2)*

First and second semesters. Four laboratory hours per week. A study of wind and percussion instruments, with emphasis on ensemble training. The student will acquire an adequate playing technique on one instrument in both woodwind and brass categories, and must gain an understanding of the acoustic principles and construction of all wind and percussion instruments. (Jordan, Henderson.)

*Music 120, 121. History of Music. (3, 3)*

First and second semesters. Prerequisites, Music 1 or 20 and junior standing. A study of musical styles from their origins in western Europe to their present-day manifestations. The interaction of music and other cultural activities. Music 120, the Greek period to Bach; Music 121, Bach to the present. (Jordan.)

*Music 141, 142. Musical Form. (2, 2)*

First and second semesters. Prerequisite, Music 70, 71. A study of the organizing

## Music

principles of musical composition, their interaction in musical forms, and their functions in different styles. Music 141, the phrase to the rondo; Music 142 the larger forms. (Jordan.)

### *Music 143, 144. Composition. (2, 2)*

First and second semesters. Prerequisite, Music 70, 71. The principles of musical composition, and their application to the smaller forms. Original writing in nineteenth and twentieth century musical idioms for various media. (Staff.)

### *Music 145, 146. Counterpoint. (2, 2)*

First and second semesters. Prerequisite, Music 70, 71. A course in eighteenth century contrapuntal techniques. Study of devices of imitation in the invention and the choral prelude. Original writing in the smaller contrapuntal forms. (Bernstein.)

### *Music 147, 148. Orchestration. (2, 2)*

First and second semesters. Prerequisite, Music 70, 71. A study of the ranges, musical functions, and technical characteristics of the instruments, and their color possibilities in various combinations. Practical experience in orchestrating for small and large ensembles. (Jordan.)

### *Music 150. Keyboard Harmony. (2)*

First semester. One lecture and two laboratory hours per week. Prerequisite, Music 70, 71. The application to the piano keyboard of the harmonic principles acquired in Music 70, 71. Harmonization of melodies, improvisation and accompanying, playing from dictation, and transposition. (Meyer.)

### *Music 160, 161. Conducting. (2, 2)*

First and second semesters. Music 160 or the equivalent is prerequisite to Music 161. A laboratory course in conducting vocal and instrumental groups. Baton technique, score reading, rehearsal techniques, tone production, style, and interpretation. Music of all periods will be introduced. (Grentzer, Henderson.)

### *Music 166. Survey of the Opera. (3)*

Second semester. Prerequisite, Music 120, 121 or the equivalent. A study of the music, librettos, and composers of the standard operas. (Randall.)

### *Music 167. Symphonic Music. (3)*

First semester. Summer session (2). Prerequisite, Music 120, 121 or the equivalent. The study of orchestral music from the Baroque period to the present. The concerto, symphony, overture, and other forms are examined. (Ulrich.)

### *Music 168. Chamber Music. (3)*

Second semester. Prerequisite, Music 120, 121 or the equivalent. The history and literature of chamber music from the early Baroque period to the present. Music for trio sonata, string quartet and quintet, and combinations of piano and string instruments is studied. (Ulrich.)

### *Music 169. Choral Music. (3)*

First semester. Prerequisite, Music 120, 121 or the equivalent. The history and literature of choral music from the Renaissance to the present, with discussion of related topics such as Gregorian chant, vocal chamber music, etc. (Jordan.)

## For Graduates

*Music 200. Advanced Studies in the History of Music. (3)*

First semester. Prerequisites, Music 120, 121, and consent of instructor. A critical study of one style period (Renaissance, Baroque, etc.) will be undertaken. The course may be repeated for credit, since a different period will be chosen each time it is offered. (Jordan.)

*Music 201. Seminar in Musicology. (3)*

Second semester. Prerequisites, Music 120, 121 and consent of instructor. The work of one major composer (Bach, Beethoven, etc.) will be studied, with emphasis on musicological method. The course may be repeated for credit, since a different composer will be chosen each time it is offered. (Jordan.)

## APPLIED MUSIC

*Course number.* A new student or one taking applied music for the first time at this University should register for Music X. He will receive the proper classification at the end of his first semester in the Department. Special fee of \$40.00 per semester for each applied-music course.

*Section number:* Every student taking an applied-music course should, in addition to registering for the proper course number, indicate the instrument chosen by adding a section number as follows:

Sec. 1, Piano	Sec. 6, Bass	Sec. 11, Horn
Sec. 2, Voice	Sec. 7, Flute	Sec. 12, Trumpet
Sec. 3, Violin	Sec. 8, Oboe	Sec. 13, Trombone
Sec. 4, Viola	Sec. 9, Clarinet	Sec. 14, Tuba
Sec. 5, Cello	Sec. 10, Bassoon	Sec. 15, Organ

*Music 12, 13. Applied Music. (2-4 hours each course)*

First and second semesters. Freshman course. Two half-hour lessons and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for piano majors in the B. Music curriculum only. Special fee of \$40.00 per semester. The student will register for Music 12, if taken for two hours credit; and Music 12D if taken for four hours credit. The same principle applies to Music 13 and Music 13D. (Staff.)

*Music 52, 53. Applied Music. (2-4 hours each course)*

First and second semesters. Sophomore course. Two half-hour lessons and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental majors in the B. Music curriculum only. Prerequisite, Music 13 (or 13D) on the same instrument. Special fee of \$40.00 per semester. The student will register for Music 52, if taken for two hours credit; and Music 52D, if taken for four hours credit. The same principle applies to Music 53 and Music 53D. (Staff.)

## *Applied Music, Philosophy*

### *Music 112, 113. Applied Music. (2-4 hours each course)*

First and second semesters. Junior course. Two half-hour lessons and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental or vocal majors in the B. Music curriculum only. Prerequisite, Music 53 (or 53D) on the same instrument. Special fee of \$40.00 per semester. The student will register for Music 112, if taken for two hours credit; and Music 112D, if taken for four hours credit. The same principle applies to Music 113 and Music 113D. (Staff.)

### *Music 152, 153. Applied Music. (2-4 hours each course)*

First and second semesters. Senior course. Two half-hour lessons and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental or vocal majors in the B. Music curriculum only. Prerequisite, Music 113 (or 113D) on the same instrument. Special fee of \$40.00 per semester. The student will register for Music 152, if taken for two hours credit; and Music 152D, if taken for four hours credit. The same principle applies to Music 153 and Music 153D. (Staff.)

## PHILOSOPHY

*Professor and Head:* GARVIN.

*Associate Professors:* LAVINE AND SCHLARETZKI.

*Assistant Professor:* LESLIE.

*Instructor:* DIAMADOPOULOS.

### *Phil. 1. Philosophy for Modern Man. (3)*

Each semester. Modern man's quest for understanding of himself and his world, with particular reference to American ideas and ideals. This course is one of a group of four courses within Elective Group I of the American Civilization Program. It may also be taken by students who qualify by tests to select substitute courses in the program (provided the student has not taken the course in his Group I elective). (Garvin, Staff.)

### *Phil. 41. Elementary Logic and Semantics. (3)*

First semester. An introductory study of logic and language, intended to help the student increase his ability to employ language with understanding and to reason correctly. Topics treated include: the uses and abuses of language, techniques for making sound inferences, and the logic of science. (Schlaretzki.)

### *Phil. 52. Philosophy in Literature. (3)*

Second semester. Reading and philosophical criticism of novels and dramas containing ideas significant for ethics, social policy, and religion. (Lavine.)

### *Phil. 53. Philosophy of Religion. (3)*

Second semester. This course seeks to provide the student with the means by which he may approach intelligently the main problems of religious thought: the nature of religious experience, the forms of religious expression, the conflicting claims of religion and science, and the place of religion in the community and in the life of the individual. (Leslie.)



*For Advanced Undergraduates and Graduates*

*Phil. 101. Ancient Philosophy. (3)*

First semester. A history of Greek thought from its beginnings to the time of Justinian. The chief figures discussed: the Presocratic philosophers, Socrates, Plato, Aristotle, Epicurus, the Stoic philosophers and Plotinus. (Diamadopoulos.)

*Phil. 102. Modern Philosophy. (3)*

Second semester. A history of philosophical thought in the West during the 16th, 17th, and 18th centuries. The chief figures discussed: Bacon, Galileo, Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume and Kant. (Schlaretzki, Diamadopoulos.)

*Phil. 120. Oriental Philosophy. (3)*

Second semester. A brief summary of Indian and Chinese philosophy. Discussion of Indian thought will center about the Rig-Veda, the Upanishads, the Buddhist philosophers, and the chief Hindu systems. Discussion of Chinese thought will center about Confucius, Lao-tse and their disciples, particular attention being given to the development of democratic ideals from Mencius to Sun Yat-sen. (Leslie.)

*Phil. 123, 124. Philosophies Men Live By. (2, 2)*

First and second semesters. Phil. 123, extension (3). Designed as electives for students who wish to acquaint themselves with the field of philosophy. Phil. 123 not necessarily a prerequisite for Phil. 124. An exploration of the fundamental beliefs which determine what men make of their lives and of the world they live in. Each semester classic statements of these beliefs by great philosophers will be chosen for class discussion on the basis of their significance for the problems confronting modern man. (Staff.)

*Phil. 125. The Great Philosophers. (3)*

Offered in Baltimore only. A discussion of the ideas of the great Western philosophers, based on readings in their works. (Staff.)

*Phil. 130. The Conflict of Ideals in Western Civilization. (3)*

First semester. A critical and constructive philosophical examination of the assumptions, goals, and methods of contemporary democracy, fascism, socialism, and communism, with special attention to the ideological conflict between the U. S. and Russia. (Schlaretzki.)

*Phil. 140. Philosophical Bases of Educational Theories. (3)*

Second semester. A critical study of the foundations of major views regarding the proper ends of education and the implications of these views for educational practice. (Staff.)

*Phil. 145. Ethics. (3)*

Second semester. A critical study of the problems and theories of human conduct, aimed at developing such principles of ethical criticism as may be applied to contemporary personal and social problems and to the formulation of an ethical philosophy of life. (Schlaretzki, Garvin.)

*Phil. 147. Philosophy of Art. (3)*

Second semester. An inquiry into the nature and functions of art. The course will begin with an examination of the relations between art and imitation, art and craft,



## Philosophy

art and beauty, art and pleasure, art and form, art and expression, art and not-art, and good, bad, and great art, and conclude with a consideration of the uses of art, propagandistic, religious, escapist, and therapeutic. (Garvin.)

### *Phil. 152. Philosophy of Social and Historical Change. (3)*

First semester. A survey and an assessment of the religious, the philosophic, and the scientific approaches to socio-historic change, including the theories of linear progress, evolutionary progress, cyclical repetition, Hegelian-Marxian dialectic, Weberian secularization and bureaucratization. (Lavine.)

### *Phil. 154. Political and Social Philosophy. (3)*

Second semester. An inquiry into the nature and functions of society and of the state. Attention is given to the major classical and contemporary theories, but the course is not primarily historical. The central problems: determination of the grounds of political obligation; reconciliation of the claims of personal freedom and social welfare. (Schlaretzki.)

### *Phil. 155. Logic. (3)*

Second semester. A critical exposition of deductive logic. The course includes an examination and appraisal of Aristotelian logic and a systematic presentation of the foundations of modern logic. Consideration is given to the application of the techniques of logic in the organization of knowledge and in scientific method. This course does not presuppose Phil. 41, but forms a natural sequel to it. (Garvin.)

### *Phil. 156. Philosophy of Science. (3)*

First semester. An inquiry into the relations of the sciences, the nature of observation, hypotheses, verification, experiment, measurement, scientific laws and theories, the basic concepts and presuppositions of science, and the relations of science to society. (Diamadopoulos, Lavine.)

### *Phil. 158. Philosophy of Language. (3)*

Second semester. An inquiry into the nature and function of language and other forms of symbolism. (Schlaretzki.)

### *Phil. 160. Medieval Philosophy. (3)*

First semester. A history of philosophic thought in the West from the close of the Classical period to the Renaissance. Based on readings in the Stoics, early Christian writers, Neoplatonists, later Christian writers and Schoolmen. (Staff.)

### *Phil. 162. American Philosophy. (3)*

Second semester. A survey of American philosophical thought from the 18th century to the present. Special attention is given to Edwards, Jefferson, Emerson, Royce, Peirce, James, Dewey and Santayana. (Schlaretzki.)

### *Phil. 163. Nineteenth Century Idealism. (3)*

First semester. A survey of Idealist thought following Kant: the Romantic Idealists, Hegel, Schopenhauer, Nietzsche, the British School. (Garvin.)

### *Phil. 164. Contemporary Movements in Philosophy. (3)*

First semester. A survey of recent and present developments in philosophy. Attention will be given to such thinkers as James, Bergson, Russell, Dewey, and Whitehead

and to such movements as Pragmatism, Idealism, Naturalism, Positivism, and Existentialism. Particular consideration will be paid to the bearing of these developments on contemporary problems of science, religion and society. (Garvin.)

*Phil. 166. Philosophy of Plato. (3)*

First semester. Prerequisite, Phil. 101 or consent of the instructor. A critical study of selected dialogues. (Diamadopoulos.)

*Phil. 167. The Philosophy of Aristotle. (3)*

Second semester. Prerequisite, Phil. 101 or consent of the instructor. A critical study of selected portions of Aristotle's writings. (Diamadopoulos.)

*Phil. 168. The Philosophy of Kant. (3)*

First semester. Prerequisite, Phil. 102 or consent of the instructor. A critical study of selected portions of Kant's writings. (Staff.)

*Phil. 170. Metaphysics. (3)*

First semester. Prerequisite, 3 hours of philosophy. A critical study of rival metaphysical theories. Analysis of basic metaphysical categories and methods. (Staff.)

*Phil. 171. Epistemology. (3)*

Second semester. Prerequisite, 3 hours of philosophy. Systematic analysis of the central problems in the theory of knowledge. Idealism, realism, phenomenism, pragmatism, empiricism, rationalism, positivism, and language analysis will be discussed in the light of contemporary developments. (Staff.)

*Phil. 175. Symbolic Logic. (3)*

First semester. Prerequisite, Phil. 41 or 155 or consent of the instructor. A study of the historical development of symbolic logic and a careful analysis of recent systems and techniques. (Garvin.)

*Phil. 191, 192, 193, 194. Topical Investigations. (1-3)*

Each semester. (Staff.)

*For Graduates*

*Phil. 215. Advanced Philosophy of Religion. (3)*

First semester. Prerequisite, consent of the instructor. Philosophical consideration of selected problems. (Staff.)

*Phil. 220. Inductive Logic and Scientific Method. (3)*

Second semester. Prerequisite, consent of the instructor. An examination of the logic of scientific procedure and of the structure and validity of scientific generalization. (Staff.)

*Phil. 230. The British Empiricists. (3)*

First semester. Prerequisite, consent of the instructor. A critical study of selected writings of Locke, Berkeley, and Hume. (Staff.)

*Phil. 232. The Continental Rationalists. (3)*

Second semester. Prerequisite, consent of the instructor. A critical study of the systems of some of the major 17th and 18th century rationalists, with special reference to Descartes, Spinoza, and Leibniz. (Staff.)

## Philosophy, Physics

### Phil. 255. *Seminar in the History of Philosophy.* (1-3)

First semester. Prerequisite, consent of the instructor. (Staff.)

### Phil. 256. *Seminar in the Problems of Philosophy.* (1-3)

Second semester. Prerequisite, consent of the instructor. (Staff.)

### Phil. 260. *Seminar in Ethics.* (3)

First semester. Prerequisite, consent of the instructor. An examination of representative ethical theories. (Staff.)

### Phil. 261. *Seminar in Aesthetics.* (3)

Second semester. Prerequisite, consent of the instructor. An examination of representative aesthetic theories. (Staff.)

### Phil. 292. *Selected Problems in Philosophy.* (1-3)

Each semester. Prerequisite, consent of the instructor. (Staff.)

### Phil. 399. *Research in Philosophy.* (1-12)

Each semester. (Staff.)

## PHYSICS

*Professor and Head:* TOLL.

*Professors:* FERRELL, MORGAN, MYERS, SINGER AND WEBER.

*Professors (Part-Time):* DE LAUNAY, HERZFELD AND F. STERN.

*Research Professors:* BURGERS\* AND MONTROLL\*.

*Visiting Research Professors:* FARAGO, OPIK AND WESKE\*.

*Associate Professors:* ANDERSON, HORNYAK, ISKRAUT, LASTER, MAC DONALD AND SNOW.

*Associate Research Professor:* HAMA\*.

*Assistant Professors:* GRIEM, MARION, RODBERG, STEINBERG, E. STERN AND SUCHER.

*Assistant Research Professors:* DAY, DETENBECK, KASNER, MARADUDIN\*, WEYMANN\* AND ZIPOY.

*Research Associates:* AYRES, HORSFALL, DIXON, FUJIMOTO, MAEDA, ONEDA, PAL, PERETTI\*, PRAKASH AND PRATS.

### Phys. 1. *Elements of Physics: Mechanics, Heat, and Sound.* (3)

First semester. Three lectures a week. Prerequisite, successful passing of the qualifying examination in elementary mathematics. Lecture demonstration fee, \$3.00. The first half of a survey course in general physics. *This course is for the general student and does not satisfy the requirements of the professional schools.* (Morgan.)

### Phys. 2. *Elements of Physics: Magnetism, Electricity, and Optics.* (3)

Second semester. Three lectures a week. Prerequisite, Phys. 1. Lecture demonstration fee, \$3.00. The second half of a survey course in general physics. *This course is for*

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\*Member of the Institute for Fluid Dynamics and Applied Mathematics.

the general student and does not satisfy the requirements of the professional schools.  
(Morgan.)

*Phys. 10, 11. Fundamentals of Physics. (4, 4)*

First and second semesters. Three lectures, one recitation, and one two-hour laboratory period a week. Prerequisite, entrance credit in trigonometry or Math. 11 or concurrent enrollment in Math. 18. Lecture demonstration and laboratory fee, \$10.00 per semester. A course in general physics treating the fields of mechanics, heat, sound, electricity, magnetism, optics, and modern physics. *This course satisfies the minimum requirements of medical and dental schools.* (Singer, Steinberg, Staff.)

*Phys. 15, 16. Introductory Physics: Mechanics, Fluids, Heat, and Sound. (4, 4)*

First and second semesters. Three lectures and two demonstration periods a week. Prerequisites, a high school physics course and concurrent enrollment in Math. 18, 19, or consent of instructor. Lecture demonstration fee, \$3.00 per semester. The first half of a broad, detailed introduction to physics, intended primarily for physics majors and other students with superior backgrounds in mathematics and the sciences.  
(Anderson.)

*Phys. 17. Introductory Physics: Electricity and Magnetism. (4)*

First semester. Three lectures and two demonstration periods a week. Prerequisites, Phys. 15, 16 and concurrent enrollment in Phys. 60 and Math. 20. Lecture demonstration fee, \$3.00. The third quarter of a broad, detailed introduction to physics, intended primarily for physics majors and other students with superior backgrounds in mathematics and the sciences.  
(Snow.)

*Phys. 18. Introductory Physics: Optics and Modern Physics. (4)*

Second semester. Three lectures and two demonstration periods a week. Prerequisites, Phys. 17 and concurrent enrollment in Phys. 60 and Math. 21, or consent of instructor. Lecture demonstration fee, \$3.00. The last quarter of a broad, detailed introduction to physics, intended primarily for physics majors and other students with superior backgrounds in mathematics and the sciences.  
(Snow.)

*Phys. 20. General Physics: Mechanics, Heat, and Sound. (5)*

First and second semesters. Three lectures, two recitations and one two-hour laboratory period a week. Math. 20 to be taken concurrently. Lecture demonstration and laboratory fee, \$10.00. The first half of a course in general physics. *Required of all students in the engineering curricula.* (Iskraut, Kasner, MacDonald, Myers, Staff.)

*Phys. 21. General Physics: Electricity, Magnetism, and Optics. (5)*

First and second semesters. Three lectures, two recitations, and one two-hour laboratory period a week. Prerequisites, Phys. 20, Math. 21 to be taken concurrently. Lecture demonstration and laboratory fee, \$10.00. The second half of a course in general physics. *Required of all students in the engineering curricula.*  
(Iskraut, Kasner, MacDonald, Myers, Staff.)

*Phys. 50, 51. Intermediate Mechanics. (2, 2)*

First and second semesters. Two lectures a week. Prerequisite, Phys. 11 or 21.  
(Morgan.)

*Phys. 52. Heat. (3)*

First semester. Three lectures a week. Prerequisite, Phys. 11 or 21. Math. 20 is to be taken concurrently.  
(Mason.)



## Physics

### *Phys. 53. Nuclear Physics and Radioactivity. (3)*

Second semester. Three lectures a week. Prerequisite, Phys. 11 or 21. (Ferrell.)

### *Phys. 54. Sound. (3)*

Second semester. Three lectures a week. Prerequisite, Phys. 11 or 21. Math. 21 is to be taken concurrently. (Hornyak.)

### *Phys. 60. Intermediate Physics Experiments. (2 credits per semester)*

Four hours of laboratory work per week. Prerequisite, Phys. 11 or 21 or concurrent enrollment in Phys. 17 or Phys. 18. Laboratory fee, \$10.00 per semester. Selected experiments. (Marion.)

## *For Advanced Undergraduates and Graduates*

### *Phys. 100. Advanced Experiments. (2 credits per semester)*

Four hours of laboratory work per week. Prerequisite, four credits of Phys. 60 or consent of instructor. Laboratory fee, \$10.00 per semester. Selected fundamental experiments in electricity and magnetism, elementary electronics, and optics. (Marion.)

### *Phys. 101. Laboratory Arts.*

Three hours laboratory a week for each credit hour. One or more credits may be taken concurrently. Prerequisite, Phys. 100 or consent of instructor. Laboratory fee, \$10.00 per credit hour. (Marion.)

### *Phys. 102. Optics. (3)*

Second semester. Three lectures a week. Prerequisites, Phys. 11 or 21 and Math. 21. It is suggested, but not required, that Phys. 60 or Phys. 100 be taken concurrently with this course. Geometrical optics, optical instruments, wave motion, interference and diffraction, and other phenomena in physical optics. (Rodberg.)

### *Phys. 103. Applied Optics. (3)*

First semester. Three lectures a week. Prerequisite, Phys. 102. A detailed study of physical optics and its applications. (Morgan.)

### *Phys. 104, 105. Electricity and Magnetism. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, Phys. 11 or 21; Math. 21. Electrostatics, direct current and alternating current circuitry, electromagnetic effects of steady currents, electromagnetic induction, radiation, development of Maxwell's equations, Poynting vector, wave equations, and electronics. (Griem.)

### *Phys. 106, 107. Theoretical Mechanics. (3, 3)*

First and second semesters. Three lectures a week. Prerequisite, Phys. 51 or consent of instructor. A detailed study of Newtonian mechanics. Dynamics, the motion of rigid bodies, oscillation problems, etc., are studied. Lagrange's equation of the first kind and the Hamilton-Jacobi equation are introduced. (Singer.)

### *Phys. 108. Physics of Electron Tubes. (3)*

First semester. Three lectures a week. Prerequisite, Phys. 104 must be taken previously or concurrently. A study of the electromagnetic principles relevant to electron tubes and of their applications. (Steinberg.)



*Phys. 109. Electronic Circuits. (4)*

Second semester. Four lectures a week. Prerequisite, Phys. 105 must be taken previously or concurrently. Theory of physics detectors and pulse circuits. Application in circuit design. (Detenbeck.)

*Phys. 110. Special Laboratory Projects in Physics. (1, 2, or 3)*

Two hours laboratory work a week for each credit hour. One to three credits may be taken concurrently, each semester. Prerequisite, Phys. 100 and consent of adviser. Laboratory fee, \$10.00 per credit hour. Selected advanced experiments. (Staff.)

*Phys. 111. Physics Shop Techniques. (1)*

First semester. One three-hour laboratory per week. Prerequisite, Phys. 100 or consent of instructor. Laboratory fee, \$10.00. Machine tools, design and construction of laboratory equipment. (Horn.)

*Phys. 114, 115. Introduction to Biophysics. (2, 2)*

First and second semesters. Two lectures a week. Prerequisites, intermediate physics and Math. 21. A study of the physical principles involved in biological processes, with particular emphasis on current research in biophysics. (Britten.)

*Phys. 116, 117. Fundamental Hydrodynamics. (3, 3)*

Three lectures a week. Prerequisites, Phys. 106 and Math. 21. Kinematics of fluid flow, properties of incompressible fluids, complex variable methods of analysis, wave motions. (Hama.)

*Phys. 118. Introduction to Modern Physics. (3)*

First semester. Three lectures a week. Prerequisites, general physics and integral calculus, with some knowledge of differential equations and a degree of maturity as evidenced by having taken one or more of the courses Phys. 50 through Phys. 110. Introductory discussion of special relativity, origin of quantum theory, Bohr atom, wave mechanics, atomic structure, and optical spectra. (Hornyak.)

*Phys. 119. Modern Physics. (3)*

Second semester. Three lectures a week. Prerequisite, Phys. 118. A survey of nuclear physics, x-rays, radioactivity, wave mechanics, and cosmic radiation. (Stern.)

*Phys. 120. Nuclear Physics. (4)*

Second semester. Four lectures a week. Prerequisite, Phys. 118 or equivalent. Shell model, liquid drop model, statistical model of nuclei, interaction of radiation and charged particles with matter, nuclear reactors, conservation laws, beta decay and other selected topics. (Hornyak.)

*Phys. 121. Neutron Physics and Fission Reactors. (4)*

Second semester. Four lectures a week. Prerequisite, Phys. 120. Neutron diffusion and reactor physics. (Shapiro.)

*Phys. 122. Properties of Matter. (4)*

First semester. Four lectures a week. Prerequisite, Phys. 118 or equivalent. Thermal, elastic, and electromagnetic properties of solids. Characteristics of fluids, and high polymer physics. (Stern.)

*Phys. 124. Introduction to Astrophysics and Geophysics. (3)*

First semester. Three lectures a week. Prerequisite, Phys. 118 or consent of instructor. Celestial mechanics, orbit theory, upper atmosphere physics, astronomical spectroscopy, motions of charged particles in the earth's magnetic field. (Opik.)

*Phys. 126. Kinetic Theory of Gases. (3)*

Three lectures a week. Prerequisites, Phys. 107 and Math. 21. Dynamics of gas particles, Maxwell-Boltzmann distribution, diffusion, Brownian motion, etc. (Mason.)

*Phys. 130, 131. Basic Concepts of Physics. (2, 2)*

First and second semesters. Two lectures a week. Prerequisite, junior standing. Lecture demonstration fee, \$2.00 per semester. A primarily descriptive course intended mainly for those students in the liberal arts who have not had any other course in physics. This course does not satisfy the requirements of professional schools nor serve as a prerequisite or substitute for other physics courses. The main emphasis in the course will be on the concepts of physics, their evolution and their relation to other branches of human endeavor. (Laster.)

*Phys. 140, 141. Atomic and Nuclear Physics Laboratory. (3, 3)*

One lecture and four hours of laboratory a week. Prerequisites, two credits of Phys. 100 and consent of instructor. Laboratory fee, \$10.00 per semester. Classical experiments in atomic physics and more sophisticated experiments in current techniques in nuclear physics. Enrollment is limited to ten students. (Marion.)

*Phys. 150. Special Problems in Physics.*

Given each semester. Prerequisite, major in physics and consent of adviser. Research or special study. Credit according to work done. Laboratory fee, \$10.00 per credit hour when appropriate. (Staff.)

*Phys. 190. Independent Studies Seminar.*

Credit according to work done, each semester. Enrollment is limited to students admitted to the Independent Studies Program in Physics. (Staff.)

### *For Graduates*

Of the courses which follow, 200, 201, 212, and 213 are given every year; all others will be given according to demand.

*Phys. 200, 201. Introduction to Theoretical Physics. (6, 6)*

First and second semesters. Six lecture hours per week. Prerequisite, Phys. 106 or consent of instructor. This basic course for graduate study in physics covers advanced classical mechanics, electrodynamics, relativity, thermodynamics, and statistical mechanics. (Myers.)

*Phys. 202, 203. Advanced Dynamics. (2, 2)*

First and second semesters. Two lectures a week. Prerequisite, Phys. 200. A detailed study of advanced classical mechanics. (Myers.)

*Phys. 204. Electrodynamics. (4)*

Four lectures a week. Prerequisite, Phys. 201. A detailed study of advanced classical electrodynamics. (Iskraut.)

*Phys. 206. Physical Optics. (3)*

Three lectures a week. Prerequisite, Phys. 201. A detailed study of advanced physical optics. (Kasner.)

*Phys. 208. Thermodynamics. (3)*

First semester. Three lectures per week. Prerequisite, Phys. 201. The first and second laws of thermodynamics are examined and applied to homogeneous and non-homogeneous systems, calculations of properties of matter, the derivation of equilibrium condition and phase transitions, the theory of irreversible processes. (Schamp.)

*Phys. 210. Statistical Mechanics. (3)*

Second semester. Three lectures a week. Prerequisites, Phys. 119 and Phys. 201. A study of the determination of microscopic behavior of matter from microscopic models. Microcanonical, canonical, and grand canonical models. Applications to solid state physics and the study of gases. (Montroll.)

*Phys. 212, 213. Introduction to Quantum Mechanics. (4, 4)*

First and second semesters. Four lectures per week. Prerequisite, Phys. 200 or an outstanding undergraduate background in physics. A study of the Schroedinger equation, matrix formulations of quantum mechanics, approximation methods, scattering theory, etc., and applications to solid state, atomic, and nuclear physics. (Ferrell.)

*Phys. 214. Theory of Atomic Spectra. (3)*

First semester. Three lectures a week. Prerequisite, Phys. 213. A study of atomic spectra and structure—one and two electron spectra, fine and hyperfine structure, line strengths, line widths, etc. (Anderson.)

*Phys. 215. Theory of Molecular Spectra. (3)*

Second semester. Three lectures a week. Prerequisite, Phys. 214. The structure and properties of molecules as revealed by rotational, vibrational, and electronic spectra. (Anderson.)

*Phys. 216, 217. Molecular Physics. (2, 2)*

Two lectures a week. Prerequisite, Phys. 213. Molecular theory of gases and liquids, ensemble theory, analysis of empirical models for molecular interactions, theory of Coulomb interactions between charge distribution. (Mason.)

*Phys. 218, 219. X-Rays and Crystal Structure. (3, 3)*

Three lectures per week. Prerequisite, Phys. 201. A detailed study of crystal structure of solids and of x-rays. (Morgan.)

*Phys. 220. Application of X-Ray and Electron Diffraction Methods. (2)*

Two laboratory periods a week. Prerequisite, concurrent enrollment in Phys. 218. The investigation of crystal structure, using x-rays and electron diffraction. (Morgan.)

*Phys. 221. Upper Atmosphere and Cosmic Ray Physics. (2)*

Second semester. Two lectures a week. Prerequisite, Phys. 200 or consent of instructor. Structure of the atmosphere, rocket and satellite experiments, primary and secondary cosmic rays, origins of cosmic rays, geomagnetic theory. (Singer.)

Phys. 222, 223. *Boundary-Value Problems of Theoretical Physics.* (2, 2)  
Prerequisite, Phys. 201. (de Launay.)

Phys. 224, 225. *Supersonic Aerodynamics and Compressible Flow.* (2, 2)  
Two lectures a week. Prerequisite, Phys. 201. (Pai.)

Phys. 226, 227. *Theoretical Hydrodynamics.* (3, 3)  
Three lectures a week. Prerequisite, Phys. 201. A detailed study of advanced fluid dynamics. (Burgers.)

Phys. 230. *Seminar.*  
Seminars on various topics in advanced physics are held each semester, with the contents varied each year. One credit for each seminar each semester. (Staff.)

Phys. 231. *Applied Physics Seminar.*  
(One credit for each semester.) (Staff.)

Phys. 232, 233. *Hydromechanics Seminar.* (1, 1)  
First and second semesters. One meeting a week. (Kennard.)

Phys. 234, 235. *Theoretical Nuclear Physics.* (3, 3)  
Three lectures a week. Prerequisites, Phys. 120 and Phys. 213. Nuclear properties and reactions, nuclear forces, two, three, and four body problems, nuclear spectroscopy, beta-decay, and related topics. (MacDonald.)

Phys. 236. *Theory of Relativity.* (3)  
Three lectures a week. Prerequisite, Phys. 200. A study of Einstein's special theory of relativity and some consequences, and a brief survey of the foundations of general relativity. (Weber.)

Phys. 237. *Relativistic Quantum Mechanics.* (3)  
First semester. Three lectures a week. Prerequisite, Phys. 213. Classical field theory, Klein-Gordon and Dirac equations, invariance properties, second quantization, renormalization, and related topics. (Sucher.)

Phys. 238. *Quantum Theory—Selected Topics.* (3)  
Three lectures a week. Prerequisite, Phys. 237. (Staff.)

Phys. 239. *Elementary Particles.* (3)  
Three lectures a week. Prerequisite, Phys. 237. Survey of elementary particles and their properties, quantum field theory, meson theory, weak interactions, possible extensions of elementary particle theory. (Day.)

Phys. 240, 241. *Theory of Sound and Vibrations.* (3, 3)  
Three lectures a week. Prerequisite, Phys. 201. A detailed study of acoustics and the theory of vibrations. (Snively.)

Phys. 242, 243. *Theory of Solids.* (2, 2)  
First and second semesters. Two lectures a week. Prerequisite, Phys. 213. Properties of metals, lattice vibrations and specific heats, Boltzmann, Fermi-Dirac, and Bose-Einstein statistics, free electron gas theories, band theory of metals. (Montroll.)



*Phys. 245. Special Topics in Applied Physics.*

(2 credits each semester.) Two lectures a week.

(Staff.)

*Phys. 246, 247. Special Topics in Fluid Dynamics. (2, 2)*

Prerequisites, advanced graduate standing and consent of the instructor.

(Burgers.)

*Phys. 248, 249. Special Topics in Modern Physics. (2, 2)*

Two lectures a week. Prerequisite, consent of instructor.

(Staff.)

*Phys. 258. Quantum Field Theory. (3)*

Second semester. Three lectures a week. Prerequisite, Phys. 237. S-matrix, Feynman diagrams, scattering theory, renormalization, conservation laws, dispersion relations, and recent non-perturbation approaches to field theory.

(Toll.)

*Phys. 260. High Energy Physics. (3)*

Three lectures a week. Prerequisite, Phys. 237. Nuclear forces are studied by examining interactions at high energies. Meson physics, scattering processes, and detailed analysis of high energy experiments.

(Snow.)

*Phys. 262, 263. Aerophysics. (3, 3)*

Three lectures. Prerequisite, consent of the instructor.

(Pai.)

*Phys. 399. Research.*

Credit according to work done, each semester. Laboratory fee, \$10.00 per credit hour. Prerequisite: an approved application for admission to candidacy or special permission of the Physics Department.

(Staff.)

### *Special Physics Courses For High School Science Teachers*

The courses in this section were especially designed for high school teachers and are not applicable to B.S., M.S., or Ph.D. degrees in physics without special permission of the Physics Department. However, these courses can be included as part of a physics minor or as electives. No prerequisites are required.

*Phys. 118A. Atoms, Nuclei, and Stars. (3)*

Three lectures per week. An introduction to basic ideas of the constitution and properties of atomic and subatomic systems and of the overall structure of the universe.

(Iskraut.)

*Phys. 122A. Properties of Materials. (3)*

Three lectures per week. An introduction to the study of solid state physics and the properties of fluids.

(Maradudin.)

*Phys. 160A. Physics Problems. (1, 2, or 3)*

Lectures and discussion sessions arranged.

(Laster.)

*Phys. 170A. Applied Physics. (3)*

Three lectures per week.

(Montroll.)

*Phys. 199. National Science Foundation Summer Institute for Teachers of Science Seminar. (1)*

Arranged during summer session. Enrollment limited to participants in the N.S.F. Summer Institute. Laboratory fee \$5.00.

(Laster, Staff.)



## PSYCHOLOGY

*Professor and Head:* ANDREWS.

*Professors:* GUSTAD, ROSS AND VERPLANCK.

*Associate Professors:* MCGINNIES, MAGOON, ROSEN AND SOLEM.

*Assistant Professors:* ANDERSON, HEERMANN, PUMROY, WEGNER AND YARCZOWER.

*Lecturer:* BRADY.

Students who are interested in the Honors Program of the Department should arrange to discuss this program and their eligibility for it with the Head of the Department.

### *Psych. 1. Introduction to Psychology. (3)*

First and second semesters. This course may be taken as Elective Group I of the American Civilization Program. A basic introductory course, intended to bring the student into contact with the major problems confronting psychology and the more important attempts at their solution. (McGinnies, Wegner, Yarczower.)

### *Psych. 2. Applied Psychology. (3)*

First and second semesters. Prerequisite, Psych. 1. Application of research methods to basic human problems in business and industry in the professions, and in other practical concerns of everyday life. (Solem, Heermann, Anderson.)

### *Psych. 4. Problems in Modern Psychology. (3)*

First and second semesters. Prerequisite, Psych. 1. Primarily for students in the College of Arts and Sciences who major or minor in psychology. A systematic survey of the field of psychology with particular emphasis on methodology. Consideration of individual differences, motivation, sensory and motor processes, learning, emotional behavior and personality. (Staff.)

### *Psych. 5. Mental Hygiene. (3)*

First and second semesters. Prerequisite, Psych. 1. Introduction to the psychology of human personality and adjustment with a view toward increasing self-understanding and developing an appreciation of the mental health movement and each individual's stake in it. (Magoon, Rosen, Staff.)

### *Psych. 21. Social Psychology. (3)*

First and second semesters. Prerequisite, Psych. 1. Personality and behavior as influenced by culture and interpersonal relations. Social influences on motivation, learning, memory, and perception. Attitudes, public opinion, propaganda, language and communication, leadership, ethnic differences, and group processes. (McGinnies, Wegner.)

### *Psych. 25. Child Psychology. (3)*

First semester. Prerequisite, Psych. 1. Behavioral analysis of normal development and normal socialization of the growing child. Leading theories of child nature and care, and their implications. (Wegner, Staff.)

### *Psych. 26. Developmental Psychology. (3)*

First semester. Prerequisite, Psych. 1. Genetic approach to human motivation and accomplishment. Research on simpler animal forms, the child, the adolescent and the adult in terms of the development of normal adult behavior. (Brady.)

## For Advanced Undergraduates and Graduates

Graduate credits will be assigned only for students certified by the Department of Psychology as qualified for graduate standing.

**Psych. 106. *Statistical Methods in Psychology.* (3)**

First and second semesters. Prerequisites, Psych. 1 and Math. 1, 5, or 10 or equivalent. A basic introduction to quantitative methods used in psychological research; measures of central tendency, of spread, and of correlation. Majors in psychology should take this course in the junior year. (Anderson, Heermann.)

**Psych. 110. *Educational Psychology.* (3)**

Prerequisite, Psych. 1 or equivalent. Researches on fundamental psychological problems encountered in education. Measurement and significance of individual differences; learning, motivation, transfer of training, and the educational implications of theories of intelligence. (Wegner.)

**Psych. 122. *Advanced Social Psychology.* (3)**

Second semester. Prerequisites, Psych. 21, senior standing, and consent of instructor. A systematic review of researches and points of view in regard to major problems in the field of social psychology. (McGinnies, Wegner.)

**Psych. 123. *Language and Social Communication.* (3)**

Second semester. Prerequisite, Psych. 21, senior standing, and consent of instructor. The nature and significance of verbal and non-verbal communication in social psychological processes, including examination of relevant theoretical approaches to symbolic behavior. (Wegner, McGinnies.)

**Psych. 128. *Human Motivation.* (3)**

First and second semesters. Prerequisite, Psych. 21. Review of research literature dealing with determinants of human performance, together with consideration of the major theoretical contributions in this area. (Verplanck.)

**Psych. 131. *Abnormal Psychology.* (3)**

First and second semesters. Prerequisite, two courses in psychology, including Psych. 5. The nature, diagnosis, etiology, and treatment of mental disorders. (Magoon, Pumroy, Rosen.)

**Psych. 136. *Applied Experimental Psychology.* (3)**

Second semester. Prerequisite, Psych. 1 or consent of instructor. A study of basic human factors involved in the design and operation of machinery and equipment. Organized for students in engineering, industrial psychology, and the biological sciences. (Ross, Anderson.)

**Psych. 140. *Psychological Problems in Advertising.* (3)**

Second semester. Prerequisite, Psych. 1. Psychological problems that arise in connection with the production and testing of advertising; techniques employed in attacking these problems through research. (Staff.)

**Psych. 142. *Techniques of Interrogation.* (3)**

First and second semesters. Prerequisite, Psych. 21. The interview, the questionnaire,

and other methods of obtaining evidence on human attitudes and reactions, as viewed in the light of modern research evidence. (Anderson.)

*Psych. 145. Introduction to Experimental Psychology. (4)*

First and second semesters. Two lectures and two two-hour laboratory periods per week. Prerequisite, Psych. 106. Laboratory fee per semester, \$4.00. Primarily for students who major or minor in psychology. A systematic survey of the laboratory methods and techniques as applied to human behavior. Emphasis is placed on individual and group participation in experiments, use of data, and preparation of reports. (Ross, Yarczower.)

*Psych. 148. Psychology of Learning. (3)*

First semester. Prerequisite, Psych. 145. Review and analysis of the major phenomena and theories of human and animal learning, including an introduction to the fields of problem solving, thinking and reasoning behavior. (Verplanck, Yarczower.)

*Psych. 150. Tests and Measurements. (3)*

Second semester. Prerequisite, Psych. 106. Laboratory fee, \$4.00. Critical survey of measuring devices used in counseling, educational and industrial practice with an emphasis on the theory, development and standardization. Laboratory practice in the administration and interpretation of a variety of commonly used tests is provided. (Gustad, Magoon.)

*Psych. 161. Industrial Psychology. (3)*

Second semester. Prerequisite, 6 hours in psychology. A course designed to aid in the understanding of the problems of people in a variety of work situations; serving as an introduction to such technical problems as personnel selection, interviewing, morale, supervision and management, and human relations in industry. Lecture, discussion and laboratory. (Solem, Heermann.)

*Psych. 180. Physiological Psychology. (3)*

First semester. Prerequisite, Psych. 145. An introduction to research on the physiological basis of human behavior, including considerations of sensory phenomena, motor coordination, emotion, drives, and the neurological basis of learning. (Ross, Brady.)

*Psych. 181. Animal Behavior. (3)*

(Same as Zool. 181). Second semester. Prerequisite, consent of instructor. A study of animal behavior, including considerations of social interactions, learning, sensory processes, motivation, and experimental methods, with a major emphasis on mammals. (Verplanck.)

*Psych. 194. Independent Study in Psychology. (1-3)*

First and second semesters. Prerequisites, senior standing and written consent of individual faculty supervisor. Integrated reading under direction, leading to the preparation of an adequately documented report on a special topic. (Staff.)

*Psych. 195. Minor Problems in Psychology. (1-3)*

First and second semesters. Prerequisite, written consent of individual faculty supervisor. An individualized course designed to allow the student to pursue a specialized topic or research project under supervision. (Staff.)

## For Graduates

(All the following courses require consent of the instructor. Descriptions are given in the Graduate School Catalog.)

*Psych. 200. Proseminar: Professional Aspects of Psychological Science. (2)*

Second semester. Prerequisite, consent of faculty adviser. Survey of professional problems in psychology, including considerations of contemporary developments, professional ethics, literature resources, formulation of critical research problems, and discussion of the major institutions requiring psychological services. (Staff.)

*Psych. 201. Sensory Processes. (3)*

Second semester. Prerequisite, Psych. 180 and 211. (Ross.)

*Psych. 202. Perception. (3)*

First semester. Prerequisite, Psych. 211. (Andrews.)

*Psych. 203, 204. Graduate Seminar. (3, 3)*

First and second semesters. (Staff.)

*Psych. 205, 206. Historical Viewpoints and Current Theories in Psychology. (3, 3)*

First and second semesters. (Verplanck.)

*Psych. 207. Learning Theory. (3)*

Second semester. Prerequisite, Psych. 212. (Verplanck, Yarczower.)

*Psych. 208. Language and Thought. (3)*

First semester. Prerequisite, Psych. 212. (Verplanck.)

*Psych. 211, 212. Advanced General Psychology. (3, 3)*

First and second semesters. Prerequisite, Psych. 145. (Ross, Yarczower.)

*Psych. 220. Psychological Concepts in Mental Health. (3)*

Second semester. (Gustad, Magoon, Rosen.)

*Psych. 221. Seminar in Counseling Psychology. (3)*

(Gustad, Magoon.)

*Psych. 222. Seminar in Clinical Psychology. (3)*

Prerequisites, Psych. 150, 220. (Rosen, Pumroy.)

*Psych. 223. Diagnosis and Correction of Reading Difficulties. (3)*

Second semester. Prerequisites, Psych. 150, 220. (Staff.)

*Psych. 224. Advanced Procedures in Clinical and Counseling Psychology. (3)*

(Staff.)

*Psych. 225, 226. Practicum in Counseling and Clinical Procedures. (1-3, 1-3)*

First and second semesters. (Magoon, Pumroy.)

*Psych. 227. Occupational Development and Choice. (3)*

Alternate years. Prerequisite, Psych. 220 and permission of instructor. (Gustad.)



## Psychology

- Psych. 228 (Same as Ed. 228). Seminar in Student Personnel. (2)*  
First semester. Prerequisite, permission of instructor. (Byrne, Gustad, Magoon.)
- Psych. 229. Advanced Industrial Psychology. (3)*  
First semester. Prerequisite, Psych. 161 or equivalent. (Solem, Heermann.)
- Psych. 230. Determinants of Human Performance. (3)*  
Second semester. (Ross.)
- Psych. 231. Training Procedures in Industry. (3)*  
Second semester. Prerequisite, Psych. 148 or equivalent. (Solem.)
- Psych. 232. Personnel Selection and Job Analysis. (3)*  
First semester. (Solem, Heermann.)
- Psych. 233. Social Organization in Industry. (3)*  
First semester. Prerequisite, Psych. 229 or equivalent. (Solem.)
- Psych. 240. Interview and Questionnaire Techniques. (3)*  
Second semester. (Anderson.)
- Psych. 241. Mass Communication and Persuasion. (3)*  
Second semester. (McGinnies.)
- Psych. 242. Seminar in Social Psychology. (3)*  
Second semester. (McGinnies.)
- Psych. 250. Mental Test Theory. (3)*  
First semester. Prerequisite, Psych. 253. (Gustad.)
- Psych. 251. Development of Predictors. (3)*  
First semester. Prerequisite, Psych. 253. (Andrews.)
- Psych. 252, 253. Advanced Statistics. (3, 3)*  
First and second semesters. Prerequisite, Psych. 106. (Andrews, Anderson, Heermann.)
- Psych. 254. Factor Analysis. (3)*  
First semester. Prerequisite, Psych. 253. (Andrews.)
- Psych. 255. Seminar in Psychometric Theory. (3)*  
Prerequisite, Psych. 253. (Andrews.)
- Psych. 260. Individual Tests. (3)*  
Prerequisite, Psych. 150. Laboratory fee, \$4.00. (Magoon, Pumroy.)
- Psych. 262. Appraisal of Personality. (3)*  
Prerequisite, Psych. 150. (Rosen.)
- Psych. 263. Research Methods in Psychodynamics. (3)*  
Alternate years. Prerequisite, Psych. 222 and permission of instructor. (Rosen.)



- Psych. 264. Projective Tests. (3)*  
 Second semester. Prerequisite, *Psych. 260*. Laboratory fee, \$4.00. (Pumroy.)
- Psych. 265. Advanced Developmental Psychology. (3)*  
 (Rosen, Pumroy.)
- Psych. 266, 267. Theories of Personality and Motivation. (3, 3)*  
 First and second semesters. (Verplanck, Rosen.)
- Psych. 268, 269. Advanced Practicum in Counseling and Clinical Procedures. (1-3, 1-3)*  
 First and second semesters. Prerequisite, *Psych. 226* and consent of instructor.  
 (Magoon, Pumroy.)
- Psych. 270. Advanced Abnormal Psychology. (3)*  
 Prerequisite, *Psych. 131*. (Gustad, Rosen.)
- Psych. 271. Special Testing of Disabilities. (3)*  
 Prerequisite, *Psych. 260*. (Magoon.)
- Psych. 272, 273. Individual Clinical Diagnosis. (3, 3)*  
 Prerequisite, *Psych. 264*. (Gustad, Rosen.)
- Psych. 280. Advanced Psychophysiology. (3)*  
 First semester. (Ross, Brady.)
- Psych. 281. Seminar in Psychopharmacology. (3)*  
 Alternate years. Prerequisite, one year of graduate study in psychology and consent of instructor. (Ross, Brady.)
- Psych. 288, 289. Special Research Problems. (1-3)*  
 First and second semesters. (Staff.)
- Psych. 399. Research for Thesis. (Credit arranged)*  
 First and second semesters. (Staff.)

## SOCIOLOGY

*Professor and Head:* HOFFSOMMER.

*Professors:* LEJINS AND MELVIN.

*Associate Professor:* SHANKWEILER.

*Assistant Professors:* ANDERSON, COATES, CUSSLER, DI BELLA, HIRZEL, MC ELHENIE AND MOTZ.

*Instrutors:* FRANZ, SCHMIDT, BITTINGER (P.T.), BOURDEAU (P.T.), DESHON, DOWELL (P.T.), LAWS (P.T.), MARCHES (P.T.) AND WILSON (P.T.).

Sociology 1 or its sociology equivalent is prerequisite to all other courses in sociology excepting Soc. 5.

Sociology 1, 2, 183, 186 and 196 or their equivalent are required for an undergraduate major in sociology.

*Soc. 1. Sociology of American Life. (3)*

First and second semesters. Summer session. This course is one of a group of four courses within Elective Group I of the American Civilization Program. It may also be taken by students who qualify by tests to select substitute courses in the program (provided the student has not taken the course as his Group I elective). Sociological analysis of the American social structure; metropolitan, small town, and rural communities; population distribution, composition and change; social organization.

(Hoffsommer, Staff.)

*Soc. 2. Principles of Sociology. (3)*

First and second semesters. Prerequisites, Soc. 1 and sophomore standing. The basic forms of human association and interaction; social processes; institutions; culture; human nature and personality.

(Cussler, Motz, Franz.)

*Soc. 5. Anthropology. (3)*

First semester. This course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. Introduction to anthropology; origins of man; development and transmission of culture; backgrounds of human institutions.

(Anderson.)

*Soc. 13. Rural Sociology. (3)*

First semester. Rural life in America; its people, social organization, culture patterns, and problems.

(Hoffsommer, Hirzel.)

*Soc. 14. Urban Sociology. (3)*

Second semester. Urban growth and expansion; characteristics of city populations; urban institutional and personality patterns; relations of city and country.

(Schmidt.)

*Soc. 51. Social Pathology. (3)*

First semester. Prerequisite, sophomore standing. Personal-social disorganization and maladjustment; physical and mental handicaps; economic inadequacies; programs of treatment and control.

(Shankweiler, Franz.)

*Soc. 52. Criminology. (3)*

Second semester. Prerequisite, sophomore standing. Criminal behavior and the methods of its study; causation; typologies of criminal acts and offenders; punishment, correction, and incapacitation; prevention of crime.

(Lejins.)

*Soc. 62. Social Institutions. (3)*

Second semester. Prerequisite, sophomore standing. Nature and function of social institutions; the perpetuation of behavior through customs and social norms; typical contemporary American institutions.

(Melvin.)

*Soc. 64. Courtship and Marriage. (3)*

First and second semesters. Prerequisite, Soc. 1 and sophomore standing. A sociological study of courtship and marriage including consideration of physiological and psychological factors. Inter-cultural companions and practical consideration. Designed for students in the lower division.

(Shankweiler, Motz, Bourdeau.)

*Soc. 71. Dynamics of Social Interaction. (3)*

Prerequisite, Soc. 1 or equivalent. Social psychology of groups like committees, teams,

clubs, sects, social movements, crowds and publics. Origin of the social self: role behavior, inter-group and intra-group relations. (Staff.)

*For Advanced Undergraduates and Graduates*

Sociology 1 or its sociology equivalent and junior standing are prerequisite to courses numbered 100 to 199.

*Soc. 102. Intercultural Sociology. (3)*

First semester. Prerequisite, Soc. 2. On the basis of a comparative study of customs, individual and group behavior patterns and institutions, this course studies the ideologies of America and other modern societies. The analysis focuses on the nature of the social processes and group behavior of various peoples having or not having a written language. (Melvin.)

*Soc. 105. Cultural Anthropology. (3)*

Second semester. A survey of the simpler cultures of the world, with attention to historical processes and the application of anthropological theory to the modern situation. (Anderson.)

*Soc. 106. Archeology. (3)*

Second semester. A survey of human cultural developments as revealed by archeological methods, with materials to be drawn from selected areas of both Old and New Worlds. (Anderson.)

*Soc. 111. Sociology of Occupations and Careers. (3)*

First semester. Prerequisite, Soc. 2 or equivalent and junior standing. The sociology of work and occupational life in modern society. Changing occupational ideologies, values and choices. Occupational status systems and occupational mobility. The social psychology of career success. (Coates.)

*Soc. 112. Rural-Urban Relations. (3)*

First semester. The ecology of population and the forces making for change in rural and urban life; migration, decentralization and regionalism as methods of studying individual and national issues. Applied field problems. (Cussler.)

*Soc. 113. The Rural Community. (3)*

Second semester. A detailed study of rural life with emphasis on levels of living, the family, school, and church and organizational activities in the fields of health, recreation, welfare, and planning. (Hoffsommer, Hirzel.)

*Soc. 114. The City. (3)*

First semester. The rise of urban civilization and metropolitan regions; ecological process and structure; the city as a center of dominance; social problems, control and planning. (Schmidt.)

*Soc. 115. Industrial Sociology. (3)*

First and second semesters. Prerequisite, Soc. 2, or permission of instructor. The sociology of human relations in American industry and business. Complex industrial and business organizations as social systems. Social relationships within and between industry, business, community, and society. (Coates.)

*Soc. 116. Military Sociology. (3)*

First and second semesters. Prerequisite, Soc. 2 or permission of instructor. Social change and the growth of military institutions. Complex formal military organizations. Military organizations as social systems. Military service as an occupation or profession. The sociology of military life. Relations between military institutions, civilian communities and society. (Coates.)

*Soc. 118. Community Organization. (3)*

First semester. Community organization and its relation to social welfare; analysis of community needs and resources; health, housing, recreation; community centers; neighborhood projects. (DiBella, McElhenie.)

*Soc. 121. Population. (3)*

First semester. Population distribution and growth in the United States and the world; population problems and policies. (Hirzel.)

*Soc. 122. Population. (3)*

Second semester. Trends in fertility and mortality, migrations, population estimates and the resulting problems and policies. (Hirzel.)

*Soc. 123. Ethnic Minorities. (3)*

First semester. Basic social processes in the relations of ethnic groups within the State; immigration groups and the Negro in the United States; ethnic minorities in Europe. (Lejins.)

*Soc. 124. The Culture of the American Indian. (3)*

Second semester. A study of type cultures; cultural processes; and the effects of acculturation on selected tribes of Indians in the Americas. (Anderson.)

*Soc. 125. Cultural History of the Negro. (3)*

First semester. The cultures of Africa south of the Sahara and the cultural adjustments of the Negro in North and South America. (Anderson.)

*Soc. 131. Introduction to Social Service. (3)*

First and second semesters. General survey of the field of social-welfare activities; historical development; growth, functions, and specialization of agencies and services, private and public. (DiBella, McElhenie.)

*Soc. 136. Sociology of Religion. (3)*

First semester. Varieties and sources of religious experience. Religious institutions and the role of religion in social life. (Anderson.)

*Soc. 141. Sociology of Personality. (3)*

First semester. Development of human nature and personality in contemporary social life; processes of socialization; attitudes, individual differences, and social behavior. (Motz, Cussler, Schmidt.)

*Soc. 144. Collective Behavior. (3)*

Second semester. Social interaction in mass behavior; communication processes; structure and functioning of crowds, strikes, audiences, mass movements, and the public. (Cussler.)



**Soc. 145. *Social Control.* (3)**

First semester. Forms, mechanisms, and techniques of group influence on human behavior; problems of social control in contemporary society. (Motz.)

**Soc. 147. *Sociology of Law.* (3)**

First semester. Law as a form of social control; interrelation between legal and other conduct norms as to their content, sanctions, and methods of securing conformity; law as an integral part of the culture of the group; factors and processes operative in the formation of legal norms as determinants of human behavior. (Lejins.)

**Soc. 153. *Juvenile Delinquency.* (3)**

First semester. Juvenile delinquency in relation to the general problem of crime; analysis of factors underlying juvenile delinquency; treatment and prevention. (Lejins, Wilson.)

**Soc. 154. *Crime and Delinquency Prevention.* (3)**

Second semester. Prerequisite, Soc. 52 or Soc. 153 or consent of instructor. (Offered in alternate years with Soc. 156.) Mobilization of community resources for the prevention of crime and delinquency; area programs and projects. (Lejins.)

**Soc. 156. *Institutional Treatment of Criminals and Delinquents.* (3)**

Second semester. Prerequisite, Soc. 52 or Soc. 153 or consent of instructor. (Offered in alternate years with Soc. 154.) Organization and functions of penal and correctional institutions for adults and juveniles. (Lejins.)

**Soc. 160. *Interviewing in Social Work.* (1½)**

Summer session only. (DiBella, McElhenie.)

**Soc. 161. *The Sociology of War.* (3)**

First semester. The origin and development of armed forces as institutions; the social causes, operations and results of war as social conflict; the relations of peace and war and revolution in contemporary civilization. (Coates.)

**Soc. 162. *Basic Principles and Current Practice in Public Welfare.* (3)**

Summer Session only. (DiBella, McElhenie.)

**Soc. 163. *Attitude and Behavior Problems in Public School Work.* (1½)**

Summer Session only. (DiBella, McElhenie.)

**Soc. 164. *The Family and Society.* (3)**

Second semester. Prerequisite, Soc. 1 and Soc. 64 or equivalent. Study of the family as a social institution; its biological and cultural foundations, historic development, changing structure and function; the interactions of marriage and parenthood, disorganizing and reorganizing factors in present day trends. (Shankweiler, Motz.)

**Soc. 171. *Family and Child Welfare.* (3)**

First semester. Programs of family and child welfare agencies; social services to families and children; child placement; foster families. (DiBella.)

**Soc. 173. *Social Security.* (3)**

First semester. The social security program in the United States; public assistance; social insurance. (DiBella.)



*Soc. 174. Public Welfare. (3)*

Second semester. Development and organization of the public welfare movement in the United States, social legislation interrelations of federal, state, and local agencies and institutions. (DiBella.)

*Soc. 180. Small Group Analysis. (3)*

Analysis of small group structure and dynamics. Review of research on small groups in factories, military service, schools and communities. Presentation of techniques used in the study of small groups. (Franz.)

*Soc. 183. Social Statistics. (3)*

First and second semesters. Measures of central tendency and dispersion, use of statistical inference in simple testing of null hypotheses, chi square, and labor saving computational devices for correlation. Majors in sociology should take this course in their junior year. (Schmidt.)

*Soc. 185. Advanced Social Statistics. (3)*

Second semester. Prerequisite, Soc. 183, or equivalent. Provides refined statistical research methods for advanced students in the social sciences. Sampling theory, specialized correlation technique, advanced tests of significance, and other procedures. (Schmidt.)

*Soc. 186. Sociological Theory. (3)*

First and second semesters. Development of the science of sociology; historical backgrounds; recent theories of society. Majors in sociology should take this course in their senior year. (Melvin, Hirzel.)

*Soc. 191. Social Field Training. (1-3)*

First and second semesters. Prerequisites, for social work field training, Soc. 131; for crime control field training, Soc. 52 and 153. Enrollment restricted to available placements. Supervised field training in public and private social agencies. The student will select his particular area of interest and be responsible to an agency for a definite program of in-service training. Group meetings, individual conferences, and written program reports will be a required part of the course. (Staff.)

*Soc. 196. Senior Seminar. (3)*

Second semester. Required of and open only to senior majors in sociology. Scope, fields, and research methods of sociology; practical applications of sociological knowledge. Individual study and reports. Sociology majors who expect to graduate in mid-year should take this course in the preceding spring semester. (Hoffsommer.)

### *For Graduates*

Prerequisites for entrance into graduate study leading to an advanced degree with a major in sociology: either (1) an undergraduate major (totaling at least 24 semester hours) in Sociology or (2) 12 semester hours of Sociology (including 6 semester hours of advanced courses) and 12 additional hours of comparable work in economics, political science, or psychology. Reasonable substitutes for these prerequisites may be accepted in the case of students majoring in other departments who desire a graduate minor or several courses in sociology.

With the exception of Soc. 201, 285, 290, and 291, individual courses numbered 200 to 299 will ordinarily be offered in alternate years.

*Soc. 201. Methods of Social Research. (3)*

First semester. Selection and formulation of research projects; methods and techniques of sociological investigation and analysis. Required of graduate majors in sociology.  
(Hoffsommer.)

*Soc. 215. Community Studies. (3)*

First semester. Intensive study of the factors affecting community development and growth, social structure, social stratification, social mobility and social institutions; analysis of particular communities.  
(Staff.)

*Soc. 216. Sociology of Occupations and Professions. (3)*

First semester. An analysis of the occupational and professional structure of American society, with special emphasis on changing roles, functions, ideologies and community-relationships.  
(Coates.)

*Soc. 221. Population and Society. (3)*

Second semester. Selected problems in the field of population; quantitative and qualitative aspects; American and world problems.  
(Hirzel.)

*Soc. 224. Race and Culture. (3)*

Second semester. Race and culture in contemporary society; mobility and the social effects of race and culture contacts and intermixture.  
(Anderson.)

*Soc. 230. Comparative Sociology. (3)*

Second semester. Comparison of the social institutions, organizations, patterns of collective behavior, and art manifestations of societal values of various countries.  
(Melvin.)

*Soc. 241. Personality and Social Structure. (3)*

First semester. Comparative analysis of the development of human nature, personality, and social traits in select social structures.  
(Cussler.)

*Soc. 246. Public Opinion and Propaganda. (3)*

Second semester. Processes involved in the formation of mass attitudes; agencies and techniques of communication; quantitative measurement of public opinion. (Motz.)

*Soc. 253. Advanced Criminology. (3)*

First semester. Survey of the principal issues in contemporary criminological theory and research.  
(Lejins.)

*Soc. 254. Seminar: Criminology. (3)*

Second semester. Selected problems in criminology.  
(Lejins.)

*Soc. 255. Seminar: Juvenile Delinquency. (3)*

First semester. Selected problems in the field of juvenile delinquency.  
(Lejins.)

*Soc. 256. Crime and Delinquency as a Community Problem. (3)*

Second semester. An intensive study of selected problems in adult crime and juvenile delinquency in Maryland.  
(Lejins.)

## *Sociology, Speech and Dramatic Art*

### *Soc. 257. Social Change and Social Policy. (3)*

First semester. Emergence and development of social policy as related to social change; policy-making factors in social welfare and social legislation. (Melvin.)

### *Soc. 262. Family Studies. (3)*

Second semester. Case studies of family situations; statistical studies of family trends, methods of investigation and analysis. (Shankweiler.)

### *Soc. 263. Marriage and Family Counseling. (3)*

Second semester. Prerequisites, Soc. 64 or Soc. 164 or consent of instructor. A sociological analysis of an emerging, family-centered profession: its interdisciplinary development and professional organization: its basic methods of coordinating art and science in solving family problems. Designed for advanced sociology majors or allied fields for use in vocations such as teaching, medicine, the ministry and others embodying the role of guidance. (Shankweiler.)

### *Soc. 264. The Sociology of Mental Health. (3)*

First semester. A study of the sociological factors that condition mental health together with an appraisal of the group dynamics of its preservation. (Melvin.)

### *Soc. 282. Sociological Methodology. (3)*

Second semester. Logic and method of sociology in relation to the general theory of scientific method; principal issues and points of view. (Staff.)

### *Soc. 285. Seminar: Sociological Theory. (3)*

First semester. Critical and comparative study of contemporary European and American theories of society. Required of graduate majors in sociology. (Melvin.)

### *Soc. 291. Special Social Problems. (Credit to be determined)*

First and second semesters. Individual research on selected problems. (Staff.)

### *Soc. 399. Thesis Research. (Credit to be determined)*

First and second semesters. (Thesis Adviser.)

## SPEECH AND DRAMATIC ART

*Professor and Head:* STRAUSBAUGH.

*Associate Professors:* BATKA AND HENDRICKS.

*Assistant Professors:* AYLWARD, CONLON, DEW, LINKOW, NIEMEYER, PROVENSEN AND PUGLIESE.

*Instructors:* ANAPOL, BECKER, CRAVEN, ELLIS, SCHMITT AND STARCHER.

*Assistant Instructors:* ANDERSON, ARMACOST, COLVIN, CREWS, KILE, RODGERS, TURNER, WAGENER AND WOLFE.

*Lecturers:* CAUSEY, SHUTTS AND WILLIAMS.

*Graduate Assistant:* DUKE.

### *\*Speech 1. Public Speaking. (3)*

First and second semesters. Prerequisite for advanced speech courses. Laboratory fee, \$1.00. The preparation and delivery of short original speeches; outside readings; reports, etc. It is recommended that this course be taken during the freshman year. (Linkow, Staff.)

*Speech Clinic. No credit.*

Remedial work in minor speech defects. The work of the clinic is conducted in individual conferences and in small group meetings. Hours arranged by consultation with the respective speech instructor. (Conlon, Staff.)

*Speech 3. Fundamentals of General American Speech. (3)*

Each semester. Training in auditory discrimination of speech sounds, rhythms and inflections of general American speech. Analysis of the physiological bases of speech production and the phonetic elements of speech reception. This course is required of speech majors, and recommended for foreign students and majors in nursery and elementary education. (Becker, Staff.)

*Speech 4. Voice and Diction. (3)*

First and second semesters. Emphasis upon the improvement of voice, articulation, and phonation. May be taken concurrently with Speech 1. (Starcher, Staff.)

*Speech 5, 6. Advanced Public Speaking. (2, 2)*

First and second semesters. Prerequisite, Speech 1, or 7, or 18 and 19. Advanced work on basis of Speech 1. Special emphasis is placed upon speaking situations the students will face in their respective vocations. (Starcher, Staff.)

*\*Speech 7. Public Speaking. (2)*

Each semester. Laboratory fee, \$1.00. The preparation and delivery of speeches on technical and general subjects. (Linkow, Staff.)

*Speech 8, 9. Acting. (3, 3)*

First and second semesters. Prerequisite, consent of instructor. Basic principles of histrionic practice. (Rodgers, Pugliese.)

*Speech 10. Group Discussion. (2)*

First and second semesters. A study of the principles, methods, and types of discussion, and their application in the discussion of contemporary problems. (Linkow, Staff.)

*Speech 11, 12. Debate. (2, 2)*

First and second semesters. Pre-Law students may take Speech 11, 12, instead of Speech 1. A study of the principles of argument, analysis, evidence, reasoning, fallacies, briefing, and delivery, together with their application in public speaking. (Anapol.)

*Speech 13. Oral Interpretation. (3)*

First semester. The oral interpretation of literature and the practical training of students in the art of reading. (Provensen.)

*Speech 14. Stagecraft. (3)*

First semester. Laboratory fee, \$2.00. Fundamentals of technical production. Emphasis on construction of scenery. (Schmitt.)

*Speech 15. Stagecraft. (3)*

Second semester. Prerequisite, Speech 14. Laboratory fee, \$2.00. Technical production. Emphasis on stage lighting. (Schmitt.)



## *Speech and Dramatic Art*

### *Speech 16. Introduction to the Theatre. (3)*

First and second semesters. A general survey of the fields of the theatre.

(Pugliese.)

### *Speech 17. Make-up. (2)*

Second semester. One lecture and one laboratory period a week. Laboratory fee, \$2.00. A lecture-laboratory course in the theory and practice of stage make-up, covering basic requirements as to age, type, character, race, and period.

(Schmitt.)

### *\*Speech 18, 19. Introductory Speech. (1, 1)*

First and second semesters. Speech 18 prerequisite for Speech 19. This course is designed to give those students practice in public speaking who cannot schedule Speech 1.

(Provensen, Staff.)

### *Speech 22. Introduction to Radio and Television. (3)*

First and second semesters. Prerequisite for all courses in radio. The development, scope, and influence of American broadcasting and telecasting, including visits to local radio and television stations, with guest lecturers from Radio Station WTOP and Television Station WTOP-TV.

(Batka.)

### *Speech 23. Parliamentary Law. (1)*

First and second semesters. A study of the principles and application of parliamentary law as applied to all types of meetings. Thorough training in the use of Robert's Rules of Order.

(Strausbaugh.)

## *For Advanced Undergraduates and Graduates*

### *Speech 102. Radio Production. (3)*

Second semester. Prerequisites, Speech 22 and consent of instructor. Laboratory fee, \$2.00. A study of the multiple problems facing the producer. Special emphasis is given to acoustic setup, casting, "miking," timing, cutting and the coordination of personnel factors involved in the production of radio programs.

(Batka.)

### *Speech 103, 104. Speech Composition and Rhetoric. (3, 3)*

First and second semesters. A study of rhetorical principles and models of speech composition in conjunction with the preparation and presentation of specific forms of public address.

(Staff.)

### *Speech 105. Speech-Handicapped School Children. (3)*

First and second semesters. Prerequisite, Speech 3 for undergraduates. The occurrence, identification and treatment of speech handicaps in the classroom. An introduction to speech pathology.

(Craven.)

### *Speech 106. Clinical Practice. (1 to 5 credits, up to 9)*

Each semester. Summer session. Prerequisite, Speech 105. May be taken for 1-5 credit hours per semester. May be repeated for a total of 9 semester hours credit. Laboratory fee, \$1.00 per hour. Clinical practice in various methods of corrective procedures with various types of speech cases in the University clinic, veterans hospitals, and the public schools.

(Conlon.)

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\*Speech 3 should be substituted as the requirement for non-English speaking students.



*Speech 107. Advanced Oral Interpretation. (3)*

Second semester. Prerequisite, Speech 13. Emphasis upon the longer reading. Program planning. (Provensen.)

*Speech 109. Speech and Language Development of Children. (3)*

Second semester. Admission by consent of instructor. An analysis of normal and abnormal processes of speech and language development in children. (Hendricks.)

*Speech 110. Advanced Group Discussion. (3)*

First and second semesters. Prerequisite, Speech 10. Required in speech curriculum and elective in other curricula. An examination of current research and techniques in the discussion and conference including extensive practice in this area. (Linkow.)

*Speech 111. Seminar. (3)*

First and second semesters. Prerequisites, senior standing and consent of instructor. Required of speech majors. Present-day speech research. (Strausbaugh, Staff.)

*Speech 112. Phonetics. (3)*

First semester. Prerequisite, Speech 3 or consent of instructor. Laboratory fee, \$3.00. Training in the recognition and production of the sounds of spoken English, with an analysis of their formation. Practice in transcription. Mastery of the international phonetic alphabet. (Conlon.)

*Speech 113. Play Production. (3)*

Second semester. Prerequisite, Speech 16 or consent of instructor. Development of procedure followed by the director in preparing plays for public performance. (Pugliese.)

*Speech 114. The Film as an Art Form. (3)*

Laboratory fee, \$7.50. A study of the motion picture as a developing form of entertainment, communication, and artistic expression. A series of significant American and foreign films are viewed to illustrate the artistic, historical and sociological trends of the twentieth century. (Niemeyer.)

*Speech 115. Radio in Retailing. (3)*

First semester. Limited to students in the College of Home Economics. Prerequisite, Speech 1 or 7. Laboratory fee, \$2.00. Writing and production of promotional programs for the merchandising of wearing apparel and housefurnishings. Collaboration with Washington and Baltimore radio stations and retail stores. (Batka.)

*Speech 116. Radio Announcing. (3)*

Second semester. Prerequisites, Speech 4 and 22 or consent of instructor. Laboratory fee, \$2.00. The theory and application of all types of announcing. (Batka.)

*Speech 117. Radio and Television Continuity Writing. (3)*

First semester. Prerequisite, Speech 22 or consent of instructor. A study of the principles, methods and limitations of writing for radio and television. Application will be made in the writing of general types of continuities and commercials. (Aylward.)

*Speech 119. Radio Acting. (3)*

Second semester. Prerequisite, Speech 22. A workshop course designed to give the student practice in radio acting. (Pugliese.)

## *Speech and Dramatic Art*

### *Speech 120. Speech Pathology. (3)*

First semester. Prerequisite, Speech 105. Laboratory fee, \$3.00. A continuation of Speech 105, with emphasis on the causes and treatment of organic speech disorders. (Hendricks.)

### *Speech 122. Radio Workshop. (3)*

First semester. Prerequisite, Speech 102 or 116. Laboratory fee, \$2.00. A laboratory course dealing with all phases of producing a radio program. (Batka.)

### *Speech 124, 125. American Public Address. (3, 3)*

First and second semesters. Prerequisite, Speech 1 or 7. The first semester covers the period from colonial times to the Civil War period. The second semester covers from the Civil War period through the contemporary period. (Anapol.)

### *Speech 126. Semantic Aspects of Speech in Human Relations. (3)*

Second semester. Prerequisite, one course in public speaking. An analysis of speech and language habits from the standpoint of general semantics. (Hendricks.)

### *Speech 129, 130. Play Directing. (3, 3)*

Prerequisite, Speech 8 or consent of instructor. A lecture-laboratory course dealing with the fundamentals of script cutting, pacing, movement, blocking, and rehearsal routine as applied to the directing of plays. (Niemeyer.)

### *Speech 131. History of the Theatre. (3)*

First semester. A survey of dramatic production from early origins to 1800.

(Niemeyer.)

### *Speech 132. History of the Theatre. (3)*

Second semester. A survey of dramatic production from 1800 to the present.

(Niemeyer.)

### *Speech 133. Communication Processes in Conferences. (3)*

Second semester. Prerequisites, Speech 103 or 104 or the equivalent. Limited to students at the off-campus centers. Group participation in conferences, methods of problem solving, semantic aspects of language and the function of conferences in industry and government. (Linkow.)

### *Speech 135. Instrumentation in Speech and Hearing Science. (2)*

First semester. Prerequisite, Speech 3. Laboratory fee, \$2.00. The use of electronic equipment in the measurement of speech and hearing. (Linkow.)

### *Speech 136. Principles of Speech Therapy. (3)*

Prerequisite, Speech 120. Laboratory fee, \$3.00. Differential diagnosis of speech and language handicaps and the application of psychological principles of learning, motivation and adjustment in the treatment of speech disorders. (Hendricks.)

### *Speech 138. Methods and Materials in Speech Correction. (3)*

Prerequisite, Speech 120 or the equivalent. Laboratory fee, \$3.00. The design and use of methods and materials for diagnosis, measurement, and retraining of the speech-handicapped. (Craven.)

### *Speech 139. Theatre Workshop. (3)*

Given each semester. Prerequisite, Speech 8 or 14. A laboratory course designed to

provide the student with practical experience in all phases of theatre production.  
(Strausbaugh.)

*Speech 140. Principles of Television Production. (3)*

First semester. Prerequisite, Speech 22. A study of the theory, methods, techniques and problems of television production and direction. Units of study covering television cameras and lenses, lighting theory and practices, scenery and properties, costumes and makeup, graphic arts and special effects are included. Observation of production procedures at nearby television stations. Application will be made through crew assignments for University-produced television programs.  
(Batka.)

*Speech 141. Introduction to Audiometry. (2)*

First semester. Prerequisite, Speech 3. Laboratory fee, \$2.00. Analysis of various methods and procedures in evaluating hearing losses. Required for students whose concentration is in speech and hearing therapy.  
(Craven.)

*Speech 142. Speech Reading and Auditory Training. (2)*

Second semester. Prerequisite, Speech 3. Laboratory fee, \$2.00. Methods of training individuals with hearing loss to recognize, interpret, and understand spoken language. Required for students whose concentration is in speech and hearing therapy.  
(Conlon.)

*Speech 146. Television News and Public Affairs. (3)*

Second semester. Prerequisite, Speech 117 or Journalism 101. Training in presentation of television news, interviews, discussions, and forums.  
(Batka.)

*Speech 147. Analysis of Broadcasting Processes and Results. (2)*

First semester. Prerequisite, Speech 22 or consent of instructor. Survey of the more common analytic approaches, methods, and results in the field of radio and television.  
(Aylward.)

*Speech 148. Television Direction. (3)*

First semester. Two hour lecture, three hour laboratory. Prerequisites, Speech 22, 140. Laboratory fee, \$10.00. Principles of television direction including analysis of script, casting, rehearsing, production, and video control.  
(Aylward.)

*Speech 149. Television Workshop. (3)*

Second semester. Two hour lecture, four hour laboratory. Prerequisites, Speech 22, 140 and 148, or consent of instructor. Laboratory fee, \$10.00.  
(Aylward.)

*Speech 150. Radio and Television Station Management. (2)*

Second semester. Prerequisite, Speech 22 or consent of instructor. Broadcasting regulations, licenses, personnel functions, sales, advertising, and program and station promotion.  
(Batka.)

*For Graduates*

The Department maintains a reciprocal agreement with Walter Reed General Hospital whereby clinical practice may be obtained at the Army Audiology and Speech Correction Center, Forest Glen, Maryland, under the direction of James P. Albrite, M.D., Director.

## Speech and Dramatic Art

Prerequisite for all courses, consent of instructor.

### *Speech 200. Thesis. (3, 6)*

Credit in proportion to work done and results accomplished. (Hendricks.)

### *Speech 201. Special Problems Seminar. (A Through K). (1, 3)*

(6 hrs. applicable toward M.A. degree.) Prerequisites, 6 hours in speech pathology and consent of instructor. A. Stuttering; B. Cleft Palate; C. Delayed Speech; D. Articulation; E. Cerebral Palsy; F. Voice; G. Special Problems of the Deaf; H. Foreign Dialect; I. Speech Intelligibility; J. Neurophysiology of Hearing; K. Minor Research Problems. (Hendricks.)

### *Speech 202. Techniques of Research in Speech and Hearing. (3)*

First semester. Prerequisite, 12 hours in speech pathology and audiology. Analysis of research methodology including experimental techniques, statistical analysis and preparation of reports for scientific investigations in speech and hearing science. Required of candidates for Master's degree in speech and hearing therapy. (Williams.)

### *Speech 203. Experimental Phonetics. (3)*

Prerequisite, Speech 112. Laboratory fee, \$3.00. The application of experimental methods in the quantitative analysis of the phonetic elements of speech. (Hendricks.)

### *Speech 210. Anatomy and Physiology of Speech and Hearing. (3)*

Prerequisite, 6 hours in speech pathology and audiology and consent of instructor. Laboratory fee, \$3.00. A study of the anatomy and physiology of the auditory and speech mechanisms. (Gerlach.)

### *Speech 211. A, B, C, D. Advanced Clinical Practice. (1, 3 up to 12)*

(6 hrs. applicable toward M.A. degree.) Prerequisite, 12 hours in speech pathology and audiology. Laboratory fee, \$1.00 per hour. Supervised training in the application of clinical methods in the diagnosis and treatment of speech and hearing disorders. (Craven.)

### *Speech 212. Advanced Speech Pathology. (3)*

Prerequisites, 6 hours in speech pathology and consent of instructor. Laboratory fee, \$3.00. Etiology and therapy for organic and functional speech disorders. (Lore.)

### *Speech 214. Clinical Audiometry. (3)*

Prerequisites, 3 hours in audiology and consent of instructor. Laboratory fee, \$3.00. Testing of auditory acuity with pure tones and speech. (Shutts.)

### *Speech 216. Communication Skills for the Hard-of-Hearing. (3)*

First semester. Prerequisites, 3 hours in audiology and consent of instructor. Speech reading, auditory training, and speech conservation problems in the rehabilitation of the hard-of-hearing.

### *Speech 217. Selection of Prosthetic Appliances for the Acoustically Handicapped. (3)*

Prerequisite, Speech 214. Laboratory fee, \$3.00. A laboratory course in modern methods of utilizing electronic hearing aids. (Shutts.)



*Speech 218. Speech and Hearing in Medical Rehabilitation and Special Education Programs. (3)*

Second semester. Prerequisites, 6 hours in speech pathology and audiology and consent of instructor. Administrative problems involved in the organization and operation of speech and hearing therapy under different types of programs. (Hendricks.)

*Speech 219. Speech Disorders of the Brain-Injured. (3)*

Prerequisites, 6 hours in speech pathology and audiology and consent of instructor. Laboratory fee, \$3.00. Methods of evaluation and treatment of children and adults who have suffered injury to brain tissue, with subsequent damage to speech and language processes. (Hendricks.)

*Speech 220. Experimental Audiology. (3)*

Second semester. Prerequisite, 6 hours in audiology. Laboratory fee, \$3.00. A study of experimental techniques in the investigation of problems in audiology and psychoacoustics. (Hendricks.)

*Speech 221. Communication Theory and Speech and Hearing Problems. (3)*

Second semester. Prerequisite, 6 hours in speech pathology and audiology and consent of instructor. Analysis of current theories of communication as they apply to research and therapy in speech and hearing. (Hendricks.)

## ZOOLOGY

*Professor and Head:* WHARTON.

*Professors:* ANASTOS AND SCHOENBORN.

*Professor Emeritus:* BURHOE.

*Associate Professors:* BROWN, HALEY AND WINN.

*Assistant Professors:* COSTELLO, GROLLMAN, HIGHTON, LINDER, RAMM AND STROSS.

*Lecturers:* BAKER AND CAMIN.

*Research Associates:* CLIFFORD AND ULMER.

*Director, Seafood Processing Laboratory:* DUNKER.

All zoology courses with laboratory have a laboratory fee of \$8.00 per course per semester.

*Zool. 1. General Zoology. (4)*

First and second semesters. Summer session. Two lectures and two two-hour laboratory periods a week. Zool. 1 and Zool. 2 satisfy the freshman pre-medical requirement in general biology. This course, which is cultural and practical in its aim, deals with the basic principles of animal life. Special emphasis is placed on human physiology. (Wharton.)

*Zool. 2. The Animal Phyla. (4)*

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 1, or Bot. 1. A study of the anatomy, classification, and life histories of representative animals, invertebrates and vertebrates. (Anastos.)



## Zoology

### Zool. 5. *Comparative Vertebrate Morphology*. (4)

First semester. Two lectures and two three-hour laboratory periods a week. Prerequisites, Zool. 1 and 2 or equivalent. A comparative study of selected organ systems in certain vertebrate groups. (Ramm.)

### Zool. 14. *Human Anatomy and Physiology*. (4)

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 1. For students who desire a general knowledge of human anatomy and physiology. (Grollman.)

### Zool. 15. *Human Anatomy and Physiology*. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 14. A continuation of Zool. 14. (Grollman.)

### Zool. 20. *Vertebrate Embryology*. (4)

Second semester. Two lectures and two three-hour laboratory periods a week. Prerequisites, Zool. 1 and 2 or equivalent. Basic principles of early development from the ovum to the establishment of the organ systems. (Ramm.)

### Zool. 55S. *Development of the Human Body*. (2)

Summer session. Five lectures a week. A study of the main factors affecting the growth and development of the child with special emphasis on normal development. (Staff.)

### Zool. 75, 76. *Journal Club*. (1, 1)

First and second semesters. One lecture a week. Prerequisites, permission of the Department and a major in zoology. Reviews, reports and discussions of current literature. (Schoenborn, Haley.)

## *For Advanced Undergraduates and Graduates*

### Zool. 102. *General Animal Physiology*. (4)

Second semester. Occasional summer session. Two lectures and two three-hour laboratory periods a week. Prerequisites, one year of zoology and one year of chemistry. The general principles of physiological functions as shown in mammals and lower animals. (Schoenborn.)

### Zool. 104. *Genetics*. (3)

First semester. Summer session. Two lectures and one discussion period a week. Prerequisite, one course in zoology or botany. A consideration of the basic principles of heredity. (Highton.)

### Zool. 108. *Animal Histology*. (4)

Second semester. Occasional summer session. Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. A microscopic study of tissues and organs of vertebrates with special emphasis on the mammal. Practice in elementary histo-technique will be included. (Brown.)

### Zool. 110. *Parasitology*. (4)

First semester. Occasional summer session. Two lectures and two two-hour laboratory periods a week. Prerequisites, Zool. 1 and 2 or permission of the instructor. A study

of the classification, morphology, life cycles and host relationships of animal parasites, with emphasis on the parasites of man. (Haley.)

*Zool. 111. Animal Parasitology. (4)*

Second semester. Alternate years. To be offered in 1960-61. Two lectures and two two-hour laboratory periods a week. Prerequisite, Zool. 110 or equivalent. A study of the classification, morphology, life cycles and host relationships of parasites of fish and wildlife and of domestic animals. (Haley.)

*Zool. 118. Invertebrate Zoology. (4)*

First semester. Occasional summer session. Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. An advanced course dealing with the taxonomy, morphology, and embryology of the invertebrates, exclusive of insects. (Linder.)

*Zool. 121. Principles of Animal Ecology. (3)*

Second semester. Occasional summer session (4). Two lectures and one three-hour laboratory period a week. Prerequisite, one year of zoology and one year of chemistry. Animals are studied in relation to their natural surroundings. Biological, physical and chemical factors of the environment which affect the growth, behavior, habits, and distribution of animals are stressed. (Stross.)

*Zool. 127. Ichthyology. (4)*

Second semester. Alternate years. To be offered 1960-61. Two lectures and one two-hour and one three-hour laboratory periods a week. Prerequisites, Zool. 5 and 20. A course in anatomy, embryology, distribution, habits and taxonomy of marine and fresh water fish. (Winn.)

*Zool. 128. Zoogeography. (4)*

First semester. Alternate years. Not offered 1960-61. Two lectures and two two-hour laboratory periods a week. Prerequisite, one year of zoology, botany, or geology. Principles governing the geographical distribution of living things, with particular reference to ecological changes during geologic time. (Staff.)

*Zool. 129. Vertebrate Zoology. (4)*

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisites, Zool. 1, 2, 5, and 20 or permission of the instructor. The identification, classification, habits and behavior of vertebrates. (Winn.)

*Zool. 130. Hydrobiology. (4)*

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisites, one year of zoology and one year of chemistry or permission of the instructor. The study of freshwater and marine ecosystems, with particular emphasis on the physics, chemistry and production biology of standing waters. (Stross.)

*Zool. 181. Animal Behavior. (3) (Same as Psych. 181)*

Second semester. Three lectures a week. Prerequisite, permission of the instructor. A study of animal behavior, including considerations of social interactions, learning sensory processes, motivation, and experimental methods, with a major emphasis on mammals. (Ross.)

## Zoology

### *Zool. 199S. National Science Foundation Summer Institute for Teachers of Science and Mathematics. Seminar. (1)*

Summer session. Seminar fee, \$5.00. An integrated discussion of recent advances and basic principles of biology. The program will include lectures by recognized authorities in various fields of biology, laboratory demonstrations, and organized discussion groups. Student participation will be encouraged. (Brown, Staff.)

## *For Graduates*

### *Zool. 202. Animal Cytology. (4)*

First semester. Alternate years. To be offered 1960-61. Two lectures and two three-hour laboratory periods a week. Prerequisite, Zool. 108. A study of cellular structure with particular reference to the morphology and physiology of cell organoids and inclusions. (Brown.)

### *Zool. 203. Advanced Embryology. (4)*

Second semester. Alternate years. Not offered 1960-61. Two lectures and two three-hour laboratory periods a week. Prerequisite, Zool. 20. Mechanics of fertilization and growth. A review of the important contributions in the field of experimental embryology. (Ramm.)

### *Zool. 204. Advanced Physiology. (4)*

First semester. Two lectures and two three-hour laboratory periods a week. Prerequisites, Zool. 102, and one year of organic chemistry. The principles of general and cellular physiology as found in animal life. (Schoenborn.)

### *Zool. 207. Zoology Seminar. (Credit to be arranged.)*

First and second semesters. Summer session. One lecture a week for each credit hour. 1. Cytology; 2. Embryology (General Embryology, Experimental Embryology, Invertebrate Embryology, Transplantation and Regeneration, Endocrines and Development); 3. Fisheries; 4. Genetics (Population Genetics); 5. Parasitology (General Parasitology, Helminthology, Fish Diseases); 6. Physiology (Physiology of Protozoa, Invertebrate Physiology, Physiology of Fishes, Physiology of Development); 7. Systematics (Evolution, Herpetology, Ichthyology, Zoogeography); 8. Ecology (Experimental Ecology, Marine Ecology, Radioisotopes in Ecology, Population Dynamics, Limnology); 9. Behavior (Comparative Behavior, Fish Behavior, Electronic Instrumentation); 19. Recent Advances (Microtechnique and Histochemistry, Russian biology). (Staff.)

### *Zool. 208. Special Problems in Zoology. (Credit to be arranged)*

First and second semesters. Summer session. 1. Cytology; 2. Embryology; 3. Fisheries; 5. Parasitology; 6. Physiology; 7. Systematics; 8. Ecology; and 9. Behavior. (Staff.)

### *Zool. 209. Advanced Parasitology. (4)*

Second semester. Alternate years. Not offered 1960-61. Three lectures and one three-hour laboratory period a week. Prerequisite, Zool. 110 or permission of the instructor. A study of the nature, origin and physiology of parasitism with emphasis on concepts of pathogenesis, immunity, epidemiology and diagnosis. (Haley.)

### *Zool. 210. Systematic Zoology. (4)*

Second semester. Alternate years. To be offered 1960-61. Three lectures and one three-

hour laboratory period a week. The principles and practices involved in the collection, preservation and classification of animals. (Highton.)

*Zool. 211, 212. Lectures in Zoology. (3, 3)*

First and second semesters. Three lectures a week. Advanced lectures by outstanding authorities in their particular field of zoology. As the subject matter is continually changing, a student may register several times, receiving credit for several semesters.

(Visiting Lecturers.)

*Zool. 215S. Fisheries Technology. (4)*

To be offered as needed during the summer session at the Sea Food Processing Laboratory, Crisfield, Maryland. Two lectures and two three-hour laboratory periods a week. The technological aspects of netting and collection of fish and other fishery resources, methods of handling the catch, marketing of fishery products, and recent advances in the utilization of fishery products. (Dunker.)

*Zool. 216. Physiological Cytology. (4)*

First semester. Alternate years. Not offered 1960-61. Two lectures and two three-hour laboratory periods a week. Prerequisites, Chem. 161, 162, Phys. 11, Zool. 102, or permission of the instructor. A study of the structure and function of cells by chemical, physical and microscopic methods. (Brown.)

*Zool. 220. Advanced Genetics. (4)*

Second semester. Alternate years. Not offered 1960-61. Two lectures and two three-hour laboratory periods a week. Prerequisite, Zool. 104. A consideration of recent developments in genetics with emphasis on population genetics and evolution. Breeding experiments with *Drosophila* will be conducted. (Highton.)

*Zool. 223. Analysis of Animal Structure. (4)*

Second semester. Alternate years. To be offered 1960-61. Two lectures and two three-hour laboratory periods a week. The integration of morphological systems and application of physical laws to animal structures. (Ramm.)

*Zool. 231S. Acarology. (3)*

Summer session only. Lecture and laboratory. An introductory study of the Acarina or mites and ticks with special emphasis on classification and biology. (Baker.)

*Zool. 232S. Medical and Veterinary Acarology. (3)*

Summer session only. Lecture and laboratory. The recognition, collection, culture, and control of Acarina important to public health and animal husbandry with special emphasis on the transmission of diseases. (Camin.)

*Zool. 233S. Agricultural Acarology. (3)*

Summer session only. Lecture and laboratory. The recognition, collection, culture and control of Acarine pests of crops and ornamentals. (Baker.)

*Zool. 234. Experimental Mammalian Physiology. (4)*

First semester. Two four-hour laboratory periods a week. Prerequisites, Zool. 102 and one year of chemistry above general chemistry. The theory, use, and application to research of instrumentation normally found in the physiology laboratory with an introduction to surgical techniques on both large and small animals. (Grollman.)

## Zoology

### *Zool. 235. Comparative Behavior. (4)*

Second semester. Alternate years. Not offered 1960-61. Two lectures and two three-hour laboratory periods a week. Prerequisites, Zool. 121 and 181, or permission of instructor. An advanced course that deals with comparative whole animal reactions to the inanimate and animate environment. Particular emphasis is placed on the correlation of field and laboratory studies. (Winn.)

### *Zool. 399. Research. (Credit to be arranged.)*

First and second semesters. Summer session. Work on thesis project only. 1. Cytology; 2. Embryology; 3. Fisheries; 5. Parasitology; 6. Physiology; 7. Systematics; 8. Ecology; and 9. Behavior. (Staff.)



# FACULTY

1960-1961

## COLLEGE OF ARTS AND SCIENCES

### *Administrative Officers*

LEON PERDUE SMITH, *Dean of the College and Professor of Romance Languages*  
B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930.

CHARLES MANNING, *Assistant Dean of the College and Associate Professor of English*

B.S., Tufts College, 1929; M.A., Harvard University, 1931; PH.D., University of North Carolina, 1950.

### *Professors*

ALFRED OWEN ALDRIDGE, *Professor of English*

B.S., Indiana University, 1937; M.A., University of Georgia, 1938; PH.D., Duke University, 1942; DOCTEUR DE L'UNIVERSITE DE PARIS, 1956.

GEORGE ANASTOS, *Professor of Zoology*

B.S., University of Akron, 1942; M.A., Harvard University, 1947; PH.D., 1949.

THOMAS G. ANDREWS, *Professor and Head of Psychology*

B.A., University of Southern California, 1937; M.A., University of Nebraska, 1939; PH.D., 1941.

WILLIAM T. AVERY, *Professor and Head of Classical Languages and Literatures*

B.A., Western Reserve University, 1934; M.A., 1935; PH.D., 1937; FELLOW OF THE AMERICAN ACADEMY IN ROME, 1937-39.

WILLIAM J. BAILEY, *Research Professor of Chemistry*

B.CHEM., University of Minnesota, 1943; PH.D., University of Illinois, 1946.

RICHARD H. BAUER, *Professor of History*

B.A., University of Chicago, 1924; M.A., 1928; PH.D., 1935.

CARL BODE, *Professor of English*

PH.B., University of Chicago, 1933; M.A., Northwestern University, 1938; PH.D., 1941; FELLOW OF THE ROYAL SOCIETY OF LITERATURE OF THE UNITED KINGDOM.

SUMNER O. BURHOE, *Professor Emeritus of Zoology*

B.S., University of Massachusetts, 1925; M.S., Kansas State College, 1926; PH.D., Harvard University, 1937.

VERNE E. CHATELAIN, *Professor of History*

B.A., Nebraska State Teachers College, 1917; M.A., University of Chicago, 1925; PH.D., University of Minnesota, 1943.

LEON W. COHEN, *Professor and Head of Mathematics*

A.B., Columbia University, 1923; A.M., 1925; PH.D., University of Michigan, 1928.

## Faculty

JULES DE LAUNAY, *Professor of Physics (Part time)*

B.A., Oxford University, 1935; M.A., 1938; PH.D., Stanford University, 1939.

AVRON DOUGLIS, *Professor of Mathematics*

A.B., University of Chicago, 1938; M.S., New York University, 1948; PH.D., 1949.

JOHN E. FABER, *Professor and Head of Microbiology*

B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.

WILLIAM F. FALLS, *Professor of Foreign Languages*

B.A., University of North Carolina, 1922; M.A., Vanderbilt University, 1928; PH.D., University of Pennsylvania, 1932.

PETER S. FARAGO, *Visiting Research Professor of Physics*

PH.D., Budapest University, 1940.

RICHARD A. FERRELL, *Professor of Physics*

B.S., California Institute of Technology, 1948; M.S., 1949; PH.D., Princeton University, 1952.

ROBERT E. FULLERTON, *Professor of Mathematics*

B.S., Heidelberg College, 1938; M.S., Syracuse University, 1940; PH.D., Yale University, 1945.

LUCIUS GARVIN, *Professor and Head of Philosophy*

B.A., Brown University, 1928; M.A., 1929; PH.D., 1933.

WESLEY M. GEWEHR, *Professor Emeritus of History*

PH.B., University of Chicago, 1911; M.A., 1912; PH.D., 1922.

FRANK GOODWYN, *Professor of Foreign Languages*

B.A., Texas College of Arts and Industries, 1939; M.A., 1940; PH.D., University of Texas, 1946.

FRANCIS B. GORDON, *Visiting Professor of Microbiology*

B.S., Illinois Wesleyan University, 1927; PH.D., University of Chicago, 1936; M.D., 1937.

ROSE M. GRENTZER, *Professor of Music*

B.A., MUS. ED., Carnegie Institute of Technology, 1935; B.A., MUS., 1936; M.A., 1939.

JOHN W. GUSTAD, *Professor of Psychology and Director of the University Counseling Center*

B.A., Macalester College, 1943; M.A., University of Minnesota, 1948; PH.D., 1949.

P. ARNE HANSEN, *Professor of Microbiology*

B.PH., University of Copenhagen, 1922; M.S., 1926; PH.D., Cornell University, 1931.

SUSAN E. HARMAN, *Professor of English*

B.A., University of Nebraska, 1917; M.A., 1918; PH.D., The Johns Hopkins University, 1926.

CHARLES HERZFELD, *Professor of Physics (Part time)*

B. CHEM. E., Catholic University, Washington, D. C., 1945; PH.D., University of Chicago, 1951.

- MAURICE R. HILLEMANN, *Visiting Professor of Microbiology*  
B.S., Montana State College, 1941; PH.D., University of Chicago, 1944.
- HAROLD C. HOFFSOMMER, *Professor and Head of Sociology*  
B.A., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.
- STANLEY B. JACKSON, *Professor of Mathematics*  
B.A., Bates College, 1933; M.A., Harvard University, 1934; PH.D., 1937.
- AUBREY C. LAND, *Professor and Head of History*  
B.ED., Southern Illinois University, 1934; M.A., State University of Iowa, 1938; PH.D., 1948.
- PETER P. LEJINS, *Professor of Sociology*  
MAGISTER PHILOSOPHIAE, University of Latvia, 1930; MAGISTER IURIS, 1933; PH.D., University of Chicago, 1938.
- ELLIS R. LIPPINCOTT, *Professor of Chemistry*  
B.A., Earlham College, 1943; M.S., The Johns Hopkins University, 1944; PH.D., 1947.
- MONROE H. MARTIN, *Professor of Mathematics*  
B.S., Lebanon Valley College, 1928; PH.D., The Johns Hopkins University, 1932.
- JOHN R. MAYOR, *Professor of Mathematics*  
B.S., Knox College, 1928; M.A., University of Illinois, 1929; PH.D., University of Wisconsin, 1933.
- JAMES G. MC MANAWAY, *Professor of English*  
B.A., University of Virginia, 1919; M.A., 1920; PH.D., The Johns Hopkins University, 1931.
- BRUCE L. MELVIN, *Professor of Sociology*  
B.S., University of Missouri, 1916; M.A., 1917; PH.D., 1921.
- HORACE S. MERRILL, *Professor of History*  
B.E., River Falls State College, 1932; PH.M., University of Wisconsin, 1933; PH.D., 1942.
- ELLIOTT MONTROLL, *Research Professor of Physics*  
B.S., University of Pittsburgh, 1937; PH.D., 1940.
- RAYMOND MORGAN, *Professor of Physics*  
B.S., Indiana University, 1916; M.S., 1917; PH.D., University of Pennsylvania, 1922.
- CHARLES D. MURPHY, *Professor and Head of English*  
B.A., University of Wisconsin, 1929; M.A., Harvard University, 1930; PH.D., Cornell University, 1940.
- RALPH D. MYERS, *Professor of Physics*  
B.A., Cornell University, 1934; M.A., 1935; PH.D., 1937.
- ERNST OPIK, *Visiting Professor of Physics*  
Moscow Imperial University, 1916; PH.D., Tartu (Dorpat) University, 1923.

## Faculty

- MICHAEL J. PELCZAR, JR., *Professor of Microbiology*  
B.S., University of Maryland, 1936; M.S., 1938; PH.D., State University of Iowa, 1941.
- A. J. PRAHL, *Professor of Foreign Languages and Associate Dean of the Graduate School*  
M.A., Washington University, 1928; PH.D., The Johns Hopkins University, 1933.
- GORDON W. PRANGE, *Professor of History*  
B.A., University of Iowa, 1932; M.A., 1934; PH.D., 1937.
- ERNEST F. PRATT, *Professor of Chemistry*  
B.A., University of Redlands, 1937; M.S., Oregon State College, 1939; PH.D., University of Michigan, 1942.
- B. HARLAN RANDALL, *Professor of Music*  
B.MUS., Washington College, 1938.
- WILKINS REEVE, *Professor of Chemistry*  
B.S., Drexel Institute of Technology, 1936; PH.D., University of Wisconsin, 1940.
- CARL L. ROLLINSON, *Professor of Chemistry*  
B.S., University of Michigan, 1933; PH.D., University of Illinois, 1939.
- HENRY W. SCHOENBORN, *Professor of Zoology*  
A.B., DePauw University, 1933; PH.D., New York University, 1939.
- LEON P. SMITH, *Dean, College of Arts and Sciences, and Professor, Romance Languages*  
B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930.
- S. FRED SINGER, *Professor of Physics*  
B.E.E., Ohio State University, 1943; M.A., Princeton University, 1944; PH.D., 1948.
- KARL L. STELLMACHER, *Professor of Mathematics*  
MASTER'S DEGREE, University of Gottingen, 1933; PH.D., 1936.
- WARREN L. STRAUSBAUGH, *Professor and Head of Speech and Dramatic Arts*  
B.S., Wooster College, 1932; M.A., State University of Iowa, 1935.
- WILLIAM J. SVIRBELY, *Professor of Chemistry*  
B.S., Carnegie Institute of Technology, 1931; M.S., 1932; D.SC., 1935.
- JOHN S. TOLL, *Professor and Head of Physics*  
B.S., Yale University, 1944; M.A., Princeton University, 1948; PH.D., 1952.
- HOMER ULRICH, *Professor and Head of Music*  
M.A., University of Chicago, 1939.
- FLETCHER P. VEITCH, *Professor of Chemistry*  
B.S., University of Maryland, 1931; M.S., 1933; PH.D., 1935.
- WILLIAM S. VERPLANCK, *Professor of Psychology*  
B.S., University of Virginia, 1937; M.A., 1938; PH.D., Brown University, 1941.

- JOEL WARREN, *Visiting Professor of Microbiology*  
B.A., Yale University, 1936; M.A., Columbia University, 1938; PH.D., 1940.
- JOSEPH WEBER, *Professor of Electrical Engineering and Physics*  
B.S., U.S. Naval Academy, 1940; PH.D., The Catholic University of America, 1951.
- FRED W. WELLBORN, *Professor of History*  
B.A., Baker University, 1918; M.A., University of Kansas, 1923; PH.D., University of Wisconsin, 1926.
- G. W. WHARTON, *Professor and Head of Zoology*  
B.S., Duke University, 1935; PH.D., 1939.
- JAMES P. WHARTON, *Professor and Head of Art*  
B.A., Wofford College, 1914; B.A., Duke University, 1914; Graduate, Maryland Institute of Fine Arts, 1923; M.F.A., University of Guanajuato, Mexico, 1952.
- JOHN R. WESKE, *Visiting Research Professor of Fluid Dynamics*  
DIPLOMA, ING. TECH. HOCHSCHULE, 1923; M.S., Harvard, 1932; SC.D., 1934.
- CHARLES E. WHITE, *Professor of Chemistry*  
B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.
- G. FORREST WOODS, *Professor of Chemistry*  
B.S., Northwestern University, 1934; B.A., 1935; M.S., Harvard University, 1937; PH.D., 1940.
- W. GORDON ZEEVELD, *Professor of English*  
B.A., University of Rochester, 1924; M.A., The Johns Hopkins University, 1929; PH.D., 1936.
- A. E. ZUCKER, *Professor and Head of Foreign Languages*  
B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.

### Associate Professors

- ROY S. ANDERSON, *Associate Professor of Physics*  
A.B., Clark University, 1943; M.A., Dartmouth College, 1948; PH.D., Duke University, 1951.
- CECIL R. BALL, *Associate Professor of English*  
B.A., College of William and Mary, 1923; M.A., University of Maryland, 1934; PH.D., The Johns Hopkins University, 1955.
- GEORGE F. BATKA, *Associate Professor of Speech and Dramatic Arts*  
B.A., Wichita University, 1938; M.A., University of Michigan, 1941.
- ALFRED J. BINGHAM, *Associate Professor of Foreign Languages*  
B.A., Yale University, 1933; PH.D., Columbia University, 1939.
- JOHN W. BRACE, *Associate Professor of Mathematics*  
B.A., Swarthmore College, 1949; M.A., Cornell University, 1951; PH.D., 1953.



## Faculty

GEORGE M. BROWN, *Associate Professor of Chemistry*

B.A., Emory University, 1942; M.S., 1943; M.A., Princeton University, 1946; PH.D., 1949.

JOSHUA R. C. BROWN, *Associate Professor of Zoology*

B.A., Duke University, 1948; M.A., 1949; PH.D., 1953.

FRANKLIN D. COOLEY, *Associate Professor of English*

B.A., The Johns Hopkins University, 1927; M.A., University of Maryland, 1933; PH.D., The Johns Hopkins University, 1940.

RAYMOND N. DOETSCH, *Associate Professor of Microbiology*

B.S., University of Illinois, 1942; M.S., Indiana University, 1943; PH.D., University of Maryland, 1948.

RICHARD A. GOOD, *Associate Professor of Mathematics*

B.A., Ashland College, 1939; M.A., University of Wisconsin, 1940; PH.D., 1945.

DONALD C. GORDON, *Associate Professor of History*

B.A., College of William and Mary, 1934; M.A., Columbia Teachers College, 1938; PH.D., Columbia University, 1947.

WILLIAM H. GRAVELY, JR., *Associate Professor of English*

B.A., College of William and Mary, 1925; M.A., University of Virginia, 1934; PH.D., 1953.

A. JAMES HALEY, *Associate Professor of Zoology*

B.S., University of New Hampshire, 1949; M.S., 1950; sc.D., Johns Hopkins University, 1955.

FRANCIS R. HAMA, *Associate Research Professor of Fluid Dynamics*

M.E., Tokyo Imperial University, 1940; sc.D., 1952.

RICHARD HENDRICKS, *Associate Professor of Speech and Dramatic Art*

B.A., Franklin College, 1937; M.A., Ohio State University, 1939; PH.D., Ohio State University, 1956.

WILLIAM F. HORNYAK, *Associate Professor of Physics*

B.E.E., City College of New York, 1944; M.S., California Institute of Technology, 1945; PH.D., 1949.

RICHARD W. ISKRAUT, *Associate Professor of Physics*

B.S., City College of New York, 1937; PH.D., Leipzig University, 1941.

WILHELMINA JASHEMSKI, *Associate Professor of History*

B.A., York College, 1931; M.A., University of Nebraska, 1933; PH.D., University of Chicago, 1942.

H. BRYCE JORDAN, *Associate Professor of Music*

B.MUS., University of Texas, 1948; M.MUS., 1949; PH.D., University of North Carolina, 1956.

CHARLES F. KRAMER, *Associate Professor of Foreign Languages*

PH.B., Dickinson College, 1911; M.A., 1912.

- NORMAN C. LAFFER, *Associate Professor of Microbiology*  
B.S., Allegheny College, 1929; M.S., University of Maine, 1932; PH.D., University of Illinois, 1937.
- HOWARD J. LASTER, *Associate Professor of Physics*  
A.B., Harvard College, 1951; PH.D., Cornell University, 1957.
- THELMA Z. LAVINE, *Associate Professor of Philosophy*  
B.A., Radcliffe College, 1936; M.A., 1937; PH.D., 1939.
- JOHN LEMBACH, *Associate Professor of Art*  
B.A., University of Chicago, 1934; M.A., Northwestern University, 1937; ED.D., Columbia Teachers College, 1946.
- WILLIAM M. MACDONALD, *Associate Professor of Physics*  
B.A., University of Pittsburgh, 1950; PH.D., Princeton University, 1955.
- THOMAS M. MAGOON, *Associate Professor of Psychology and Assistant Director of the University Counseling Center*  
B.A., Dartmouth University, 1947; M.A., University of Minnesota, 1951; PH.D., 1954.
- CHARLES MANNING, *Associate Dean of the College and Associate Professor of English*  
B.S., Tufts College, 1929; M.A., Harvard University, 1931; PH.D., University of North Carolina, 1950.
- HERMAN MARIL, *Associate Professor of Art*  
GRADUATE, Maryland Institute of Fine Arts, 1928.
- EDWARD A. MASON, *Associate Professor of Molecular Physics*  
B.S., Virginia Polytechnic Institute, 1947; PH.D., Massachusetts Institute of Technology, 1950.
- ELLIOTT M. MCGINNIES, *Associate Professor of Psychology*  
B.A., University of Buffalo, 1943; M.A., Brown University, 1944; M.A., Harvard University, 1946; PH.D., 1948.
- ARTHUR C. PARSONS, *Associate Professor of Foreign Languages*  
B.A., University of Maryland, 1926; M.A., 1928.
- HUGH B. PICKARD, *Associate Professor of Chemistry*  
B.A., Haverford College, 1933; PH.D., Northwestern University, 1938.
- WILLIAM R. QUINN, *Associate Professor of Foreign Languages*  
B.A., University of Virginia, 1922; M.A., 1923; PH.D., The Johns Hopkins University, 1934.
- ALBERT ROSEN, *Associate Professor of Psychology*  
B.A., University of Pittsburgh, 1940; M.A., University of Minnesota, 1948; PH.D., 1952.
- HOMER W. SCHAMP, JR., *Associate Professor of Molecular Physics*  
A.B., Miami University, 1944; M.S., University of Michigan, 1947; PH.D., 1952.
- WALTER E. SCHLARETZKI, *Associate Professor of Philosophy*  
B.A., Monmouth College, 1941; M.A., University of Illinois, 1942; PH.D., Cornell University, 1948.

## Faculty

- PAUL W. SHANKWEILER, *Associate Professor of Sociology*  
PH.B., Muhlenberg University, 1919; M.A., Columbia University, 1921; PH.D., University of North Carolina, 1934.
- MAURICE R. SIEGLER, *Associate Professor of Art*  
GRADUATE, Pennsylvania Academy of Fine Arts, 1921; CERTIFICATE, Fontainebleau School of Fine Arts, 1926; B.S., IN ARCHITECTURE, Georgia School of Technology, 1930; M.F.A., University of Guanajuato, Mexico, 1956.
- GEORGE A. SNOW, *Associate Professor of Physics*  
B.S., College of the City of New York, 1945; M.A., Princeton University, 1947; PH.D., 1949.
- ALLEN R. SOLEM, *Associate Professor of Psychology*  
B.A., University of Minnesota, 1938; M.A., Wayne University, 1948; PH.D., University of Michigan, 1953.
- DAVID S. SPARKS, *Associate Professor of History*  
B.A., Grinnell College, 1944; M.A., University of Chicago, 1945; PH.D., 1951.
- FAGUE K. SPRINGMANN, *Associate Professor of Music*  
B.MUS., Westminster Choir College, 1939.
- ROLAND N. STROMBERG, *Associate Professor of History*  
B.A., University of Kansas City, 1939; M.A., American University, 1945; PH.D., University of Maryland, 1952.
- CALVIN F. STUNTZ, *Associate Professor of Chemistry*  
B.A., University of Buffalo, 1939; PH.D., 1947.
- JOSEPH T. VANDERSLICE, *Associate Professor of Molecular Physics*  
B.S., Boston College, 1949; PH.D., Massachusetts Institute of Technology, 1952.
- KATHRYN M. PAINTER WARD, *Associate Professor of English*  
B.A., The George Washington University, 1935; M.A., 1936; PH.D., 1947.
- KURT WEBER, *Associate Professor of English*  
B.A., Williams College, 1930; B.A., Oxford University, 1932; M.A., Columbia University, 1933; PH.D., 1940.
- HOWARD E. WINN, *Associate Professor of Zoology*  
B.A., Bowdoin College, 1948; M.S., University of Michigan, 1950; PH.D., 1955.

## Assistant Professors

- FRANK G. ANDERSON, *Assistant Professor of Sociology*  
A.B., Cornell University, 1941; PH.D., University of New Mexico, 1951.
- NANCY S. ANDERSON, *Assistant Professor of Psychology*  
B.A., University of Colorado, 1952; M.A., Ohio State University, 1953; PH.D., 1956.
- MARY L. ANDREWS, *Assistant Professor of English*  
B.S., New York University, 1929; M.A., 1935; PH.D., 1941.

THOMAS J. AYLWARD, *Professor of Speech and Dramatic Art*  
B.S., University of Wisconsin, 1947; M.S., 1949.

JACK C. BARNES, *Assistant Professor of English*  
B.A., Duke University, 1939; M.A., 1947; PH.D., University of Maryland, 1954.

OTHO T. BEALL, JR., *Assistant Professor of English*  
B.A., Williams College, 1930; M.A., University of Minnesota, 1933; PH.D., University of Pennsylvania, 1952.

EARL S. BEARD, *Assistant Professor of History*  
B.A., Baylor University, 1948; M.A., State University of Iowa, 1950; PH.D., 1953.

BERNARD G. BERENSON, *Assistant Professor of Psychology and Counselor in the University Counseling Center*

B.A., American University, 1953; M.A., University of Maryland, 1957; PH.D., 1959.

JOEL H. BERMAN, *Assistant Professor of Music*  
B.S., Juilliard School of Music, 1951; M.A., Columbia University, 1953.

ALFRED C. BOYD, *Assistant Professor of Chemistry*  
B.S., Canisius College, 1951; PH.D., Purdue University, 1957.

FURMAN A. BRIDGERS, *Assistant Professor of Foreign Languages*  
B.A., Duke University, 1925; M.A., University of Chicago, 1928.

SAMUEL E. BROWN, *Assistant Professor of English*  
B.A., Indiana University, 1934; M.A., 1946; PH.D., Yale University, 1955.

ELEANOR W. BULATKIN, *Assistant Professor of Foreign Languages*  
M.A., Johns Hopkins University, 1950; PH.D., 1952.

GEORGE H. CALLCOTT, *Assistant Professor of History*  
B.A., University of South Carolina, 1950; M.A., Columbia University, 1951; PH.D., University of North Carolina, 1956.

JOHN CARRUTHERS, *Assistant Professor of Chemistry*

CHARLES H. COATES, *Assistant Professor of Sociology*  
B.S., West Point, 1924; M.A., Louisiana State University, 1952; PH.D., 1955.

PAUL K. CONKIN, *Assistant Professor of History*  
B.A., Milligan College, 1951; M.A., Vanderbilt University, 1953; PH.D., 1957.

SARA E. CONLON, *Assistant Professor of Speech and Dramatic Art*  
B.A., University of Maryland, 1947; M.A., State University of Iowa, 1950.

ELLEN CORREL, *Assistant Professor of Mathematics*  
B.S., Douglas College (Rutgers University), 1951; M.S., Purdue University, 1953; PH.D., 1957.

JOHN L. COULTER, *Assistant Professor of English*  
B.A., American University, 1934; M.A., University of North Carolina, 1936.

HERBERT A. CROSMAN, *Assistant Professor of History*  
B.A., Harvard University, 1938; M.A., 1944; PH.D., 1947.

## Faculty

MARGARET T. CUSSLER, *Assistant Professor of Sociology*

B.A., New York State College of Teachers at Albany, 1933; M.A., Radcliffe College, 1941; PH.D., 1943.

THOMAS B. DAY, *Assistant Research Professor of Physics*

B.S., University of Notre Dame, 1952; PH.D., Cornell University, 1957.

CONSTANCE P. DENT, *Assistant Professor of Psychology and Counselor in the University Counseling Center*

B.A., Bucknell University, 1951; M.A., Temple University, 1951; PH.D., Pennsylvania State University, 1958.

ROBERT L. DETENBECK, *Assistant Research Professor of Physics*

DONALD DEW, *Assistant Professor of Speech and Dramatic Art*

B.A., University of Maryland, 1950; M.A., State University of Iowa, 1956; PH.D., State University of Iowa, 1958.

EDWARD DIBELLA, *Assistant Professor of Sociology*

B.S., Washington University, 1936; M.A., 1938.

EITEL W. DOBERT, *Assistant Professor of Foreign Languages*

B.A., University of Geneva, 1932; M.A., University of Maryland, 1949; PH.D., 1954.

GERTRUDE EHRLICH, *Assistant Professor of Mathematics*

B.S., Georgia State College for Women, 1943; M.A., University of North Carolina, 1945; PH.D., University of Tennessee, 1953.

E. JAMES FERGUSON, *Assistant Professor of History*

B.A., University of Washington, 1939; M.A., 1941; PH.D., University of Wisconsin, 1951.

RUDD FLEMING, *Assistant Professor of English*

B.A., University of Chicago, 1930; M.A., Cornell University, 1932; PH.D., 1934.

GILBERT GORDON, *Assistant Professor of Chemistry*

B.S., Bradley University, 1955; PH.D., Michigan State University, 1959.

HANS GRIEM, *Assistant Professor of Physics*

ABITUR, Max-Planck-Schule, Kiel, Germany, 1949; PH.D., Universitat Kiel, Germany, 1954.

SIDNEY GROLLMAN, *Assistant Professor of Zoology*

B.S., University of Maryland, 1947; M.S., 1949; PH.D., 1952.

FRANCIS S. GRUBAR, *Assistant Professor of Art*

B.A., University of Maryland, 1948; M.A., 1949; M.A., Johns Hopkins University, 1952.

THOMAS W. HALL, *Assistant Professor of Foreign Languages*

B.A., University of Maryland, 1938; M.A., Middlebury College, 1950; PH.D., University of Maryland, 1958.

HUBERT P. HENDERSON, *Assistant Professor of Music and Director of University Bands*

B.A., University of North Carolina, 1941; M.A., 1950.



- HERBERT H. HENKE, *Assistant Professor of Music and Music Education*  
B.MUS.ED., Oberlin College, 1953; M.MUS., 1954.
- EMIL F. HEERMANN, *Assistant Professor of Psychology*  
B.A., University of Cincinnati, 1952; M.A., Ohio State University, 1957; PH.D., 1959.
- CHRISTOPH A. HERING, *Assistant Professor of Foreign Languages*  
PH.D., University of Bonn, 1950.
- RICHARD T. HIGHTON, *Assistant Professor of Zoology*  
B.A., New York University, 1950; M.S., University of Florida, 1953; PH.D., 1956.
- ROBERT K. HIRZEL, *Assistant Professor of Sociology*  
B.A., Pennsylvania State College, 1946; M.A., 1950; PH.D., Louisiana State University, 1954.
- JOHN HORVATH, *Assistant Professor of Mathematics*  
PH.D., University of Budapest, 1947.
- ROLF O. HUBBE, *Assistant Professor of Classical Languages and Literatures*  
B.A., Hamilton College, 1947; M.A., Princeton University, 1950; PH.D., 1950.
- JAMES A. HUMMEL, *Assistant Professor of Mathematics*  
B.S., California Institute of Technology, 1949; M.A., Rice Institute, 1953; PH.D., 1955.
- RICHARD JAQUITH, *Assistant Professor of Chemistry*  
B.S., University of Massachusetts, 1940; M.S., 1942; PH.D., Michigan State University, 1955.
- FRANTZ J. KASLER, *Assistant Professor of Chemistry*  
DOKTORANDUM, University of Vienna, 1956; PH.D., 1959.
- WILLIAM KASNER, *Assistant Research Professor of Physics*  
B.S., Case Institute of Technology, 1951; PH.D., University of Pittsburgh, 1957.
- SITARAMA LAKSHMANAN, *Assistant Professor of Chemistry*  
B.S., Annamalai University (India), 1946; M.A., 1949; PH.D., University of Maryland, 1954.
- CHARLES W. LESLIE, *Assistant Professor of Philosophy*  
B.A., Victoria College, 1930; M.A., University of Toronto, 1933; PH.D., Harvard University, 1945.
- HARRIS J. LINDER, *Assistant Professor of Zoology*  
B.S., Long Island University, 1951; M.S., Cornell University, 1955; PH.D., 1958.
- IRVING LINKOW, *Assistant Professor of Speech and Dramatic Art*  
B.A., University of Denver, 1937; M.A., 1938.
- LEONARD I. LUTWACK, *Assistant Professor of English*  
B.A., Wesleyan University, 1939; M.A., 1940; PH.D., Ohio State University, 1950.
- WILLIAM G. MAISCH, *Assistant Professor of Molecular Physics*  
B.S., University of Pennsylvania, 1951; PH.D., Brown University, 1956.

## Faculty

- ALEXEI A. MARADUDIN, *Assistant Research Professor in Physics*  
B.S., Stanford University, 1953; M.S., 1954; PH.D., University of Bristol, 1957.
- JERRY MARION, *Assistant Professor of Physics*  
B.A., Reed College, 1952; M.S., Rice Institute, 1953; PH.D., 1955.
- MINERVA L. MARTIN, *Assistant Professor of English*  
B.S., University of Alabama, 1931; M.A., Louisiana State University, 1937; PH.D., 1940.
- ANNIE L. MCELHENIE, *Assistant Professor of Sociology*  
A.B., Franklin College, 1926; B.S., Hillsdale College, 1927; M.A., University of Chicago, 1941; Certificate Third Year, New York School of Social Work, Columbia University, 1951.
- CHARLTON MEYER, *Assistant Professor of Music*  
B.MUS., Curtis Institute, 1952.
- CHARLES C. MISH, *Assistant Professor of English*  
B.A., University of Pennsylvania, 1936; M.A., 1946; PH.D., 1951.
- ANNABELLE B. MOTZ, *Assistant Professor of Sociology*  
B.A., University of Wisconsin, 1941; M.A., University of Chicago, 1943; PH.D., 1950.
- JOHN V. MUELLER, *Assistant Professor of Psychology and Counselor in the University Counseling Center*  
B.A., University of Iowa, 1954; M.A., Ohio State University, 1957; PH.D., 1959.
- GRACIELA P. NEMES, *Assistant Professor of Foreign Languages*  
B.S., Trinity College, 1942; M.A., University of Maryland, 1949; PH.D., 1952.
- GROVER C. NIEMEYER, *Assistant Professor of Speech and Dramatic Art*  
B.S., DePauw University, 1933; M.A., Northwestern University, 1935; PH.D., Yale University, 1942.
- MARTIN H. PEARL, *Assistant Professor of Mathematics*  
B.A., Brooklyn College, 1950; M.A., University of Michigan, 1951; PH.D., University of Wisconsin, 1955.
- JOHN PORTZ, *Assistant Professor of English*  
B.S., Duke University, 1937; M.A., Harvard University, 1941; PH.D., 1958.
- HESTER B. PROVENSEN, *Assistant Professor of Speech and Dramatic Art*  
LL.B., George Washington University, 1926; M.A., Emerson College, 1948.
- RUDOLPH E. PUGLIESE, *Assistant Professor of Speech and Dramatic Art*  
B.A., Miami University, 1947; M.A., Catholic University, 1949.
- DONALD K. PUMROY, *Assistant Professor of Psychology*  
B.A., University of Iowa, 1949; M.S., University of Wisconsin, 1951; PH.D., University of Washington, 1954.
- WILLIAM C. PURDY, *Assistant Professor of Chemistry*  
A.B., Amherst College, 1951; PH.D., Massachusetts Institute of Technology, 1955.

- GORDON M. RAMM, *Assistant Professor of Zoology*  
B.A., University of Buffalo, 1949; M.A., 1950; PH.D., New York University, 1954.
- MARGUERITE C. RAND, *Assistant Professor of Foreign Languages*  
B.A., Pomona College, 1919; M.A., Stanford University, 1921; PH.D., University of Chicago, 1951.
- PATRICK W. RIDDLEBERGER, *Assistant Professor of History*  
B.A., Virginia Military Institute, 1939; M.A., University of California, 1949; PH.D., 1952.
- GEORG J. RIEGER, *Assistant Professor of Mathematics*  
DR. RER. NAT., University of Giessen, 1953; HABILITATION, 1955.
- HELEN A. RIVLIN, *Assistant Professor of History*  
B.A., University of Rochester, 1949; M.A., Radcliffe College, 1950; D. PHIL., Oxford University, 1953.
- LEONARD S. RODBERG, *Assistant Professor of Physics*  
B.A., Johns Hopkins University, 1954; PH.D., Massachusetts Institute of Technology, 1957.
- WILLIAM G. ROSEN, *Assistant Professor of Mathematics*  
B.S., University of Illinois, 1943; M.S., 1947; PH.D., 1954.
- LEONORA C. ROSENFELD, *Assistant Professor of Foreign Languages*  
B.A., Smith College, 1930; M.A., Columbia University, 1931; PH.D., 1940.
- HERBERT SCHAUMANN, *Assistant Professor of English*  
B.A., Westminster College, 1931; PH.D., Cornell University, 1935.
- MARK SCHWEIZER, *Assistant Professor of Foreign Languages*  
M.A., University of Maryland, 1931; PH.D., 1941.
- GAYLE S. SMITH, *Assistant Professor of English*  
B.S., Iowa State College, 1948; M.A., Cornell University, 1951; PH.D., 1958.
- HENRY PHILLIP STEINBERG, *Assistant Professor of Physics*  
B.S., University of Cincinnati, 1954; PH.D., Northwestern University, 1959.
- EDWARD A. STERN, *Assistant Professor of Physics*  
B.S., California Institute of Technology, 1951; PH.D., 1955.
- M. ELIZABETH STITES, *Assistant Professor of Art*  
B.Arch., New York University, 1941.
- RAYMOND G. STROSS, *Assistant Professor of Zoology*  
B.S., University of Missouri, 1952; M.S., University of Idaho, 1954; PH.D., University of Wisconsin, 1958.
- JOSEPH SUCHER, *Assistant Professor of Physics*  
B.S., Brooklyn College, 1952; PH.D., Columbia University, 1957.
- RAYMOND THORBERG, *Assistant Professor of English*  
B.A., University of Alaska, 1939; M.A., University of Chicago, 1946; PH.D., Cornell University, 1954.

## Faculty

JAMES A. WALKER, *Assistant Professor of English*

B.A., Amherst College, 1939; M.A., Harvard University, 1941; PH.D., 1948.

NORMA WEGNER, *Assistant Professor of Psychology*

B.A., Hunter College, 1944; M.A., Cornell University, 1946; PH.D., University of Connecticut, 1955.

HELMUT WEYMANN, *Assistant Research Professor of Fluid Dynamics*

DIPL. IN PHYSICS, Technische Hochschule Aachen, 1952; DR. RER. NAT., 1954.

MATTHEW YARCZOWER, *Assistant Professor of Psychology*

B.B.A., College of the City of New York, 1953; M.A., University of Maryland, 1955; PH.D., 1958.

MISHAEL ZEDEK, *Assistant Professor of Mathematics*

M.S., Hebrew University, Jerusalem, 1952; PH.D., Harvard University, 1956.

## Research Associates

ROBERT AYRES, *Research Associate in Physics*

A.B., University of Chicago, 1952; B.S., 1954; PH.D., University of London, 1958.

CARLETON M. CLIFFORD, *Research Associate in Zoology*

B.A., University of Vermont, 1954; PH.D., University of Maryland, 1958.

ROSEMARY COLDWELL HORSFALL, *Research Associate in Physics*

B.S., University of St. Andrews, 1954; PH.D., University of Oxford, 1959.

PEGGY A. DIXON, *Research Associate in Physics*

B.A., Western Reserve University, 1950; M.S., University of Maryland, 1954; PH.D., University of Maryland, 1959.

ROBERT J. FALLON, *Research Associate in Molecular Physics (post-doctoral)*

B.A., Catholic University, 1954; M.S., 1955; PH.D., 1959.

JACK D. FINDLEY, *Research Associate in Psychology*

B.A., Baylor University, 1951; PH.D., Columbia University, 1954.

LOUIS T. HO, *Research Associate in Molecular Physics*

B.A., Catholic University, 1953.

VENUCOPAL KESAVULU, *Research Associate in Molecular Physics (post-doctoral)*

B.S., HONORS, University of Mysore, India, 1948; M.S., 1951; PH.D., New York University, 1960.

YOG PRAKASH KULSBESHTHA, *Research Associate in Physics*

B.S., Agra College, 1949; M.S., Aligarh University, 1952; PH.D., 1955.

MANOJ K. PAL, *Research Associate in Physics*

I.S., Presidency College, 1949; B.S., 1951; M.S., Calcutta University, 1953.

JEAN PERETTI, *Research Associate in Physics*

LICENCE-ES-SCIENCES, 1941; Agregation des Science Physique, 1951; PH.D., University of Grenoble, France, 1957.

- YOLANDA PRATT, *Research Associate in Chemistry*  
B.A., Cornell University, 1938; PH.D., Columbia University, 1942.
- SADAO ONEDA, *Research Associate in Physics*  
B.S., Tohoku University, 1956; D.S., Nagoya University, 1953.
- SAMUEL B. SCHNITZER, *Research Associate in Psychology*  
B.A., Temple University, 1951; M.S., Pennsylvania State University, 1953; PH.D., 1958.
- IRWIN TOBIAS, *Research Associate in Molecular Physics (post-doctoral)*  
B.S., Brooklyn College, 1956; PH.D., Princeton University, 1959.
- JOHN W. TREMBLY, *Research Associate in Molecular Physics*
- DAVID H. B. ULMER, *Research Associate in Zoology*  
A.B., Duke University, 1946; PH.D., 1955.
- STANLEY WEISSMAN, *Research Associate in Molecular Physics (post-doctoral)*  
B.S., Roosevelt University, 1953; PH.D., Illinois Institute of Technology, 1959.

### Instructors

- VALENTINA ADAMS, *Instructor of Foreign Languages*  
B.A., Sarah Lawrence College, 1950; CERTIFICATE OF FRENCH LANGUAGE, Sorbonne, University of Paris, 1954; M.A., University of Maryland, 1959.
- MALTHON M. ANAPOL, *Instructor of Speech and Dramatic Art*  
B.S., Rutgers University, 1949; M.A., Temple University, 1953.
- ROBERT T. ANDERSON, *Instructor of Foreign Languages*  
A.B., University of Missouri, 1947; M.A., University of Illinois, 1949; PH.D., Ohio State University, 1958.
- E. RHEDA BECKER, *Instructor of Speech and Dramatic Art*  
B.A., University of Maryland, 1956; M.A., 1957.
- RICHARD D. BECKMAN, *Instructor of English*  
B.A., Columbia University, 1953; M.A., Rochester University, 1954.
- MELVIN BERNSTEIN, *Instructor of Music*  
A.B., Southwestern at Memphis, 1947; B. MUS., 1948; M. MUS., University of Michigan, 1949; M.A., University of North Carolina, 1954.
- JOSEPH C. BLAIR, *Instructor of Foreign Languages*  
A.B., University of Maryland, 1951.
- MARIE BOBORYKINE, *Instructor of Foreign Languages*  
M.A., St. Petersburg Archeological Institute, 1914.
- HUGO A. BOURDEAU, *Instructor of Sociology*  
A.B., Tufts University, 1951; M.A., Boston University, 1952.
- GEORGE P. BREWSTER, *Instructor of Mathematics*  
B.S., U. S. Naval Academy, 1916.



## Faculty

- RAY B. BROWNE, *Instructor of English*  
B.A., University of Alabama, 1943; M.A., Columbia University, 1947; PH.D., University of California, Los Angeles, 1956.
- DOROTHY BUTTS, *Instructor of English*  
B.A., College of William and Mary, 1951; M.ED., University of Virginia, 1954.
- CHUNJEN C. CHEN, *Instructor of Foreign Languages*  
B.S., Cornell University, 1919; M.S., University of Maryland, 1920.
- JOHN C. CLENDENIN, *Instructor of English*  
B.S., Mansfield State Teachers College, 1935; M.A., Bucknell University, 1941.
- SHEROD M. COOPER, JR., *Instructor of English*  
B.S., Temple University, 1951; M.A., 1953.
- PHYLLIS W. COWEN, *Instructor of English*  
B.A., Hunter College, 1947; M.A., University of Syracuse, 1948.
- DOROTHY D. CRAVEN, *Instructor of Speech and Dramatic Art*  
B.S., Missouri State Teachers College, 1945; M.A., State University of Iowa, 1948.
- CONSTANCE H. DEMAREE, *Instructor of English*  
B.A., University of Maryland, 1944; M.A., 1945.
- SHIRLEY K. DESHON, *Instructor of Sociology*  
B.A., Smith College, 1946; PH.D., Yale University, 1959.
- MARY F. DE VERMOND, *Instructor of Music*  
B.MUS., Howard University, 1942; M.A., Columbia University, 1948; ED.D., University of Maryland, 1959.
- PETER DIAMADOPOULOS, *Instructor of Philosophy*  
B.A., Harvard University, 1952; M.A., 1956; PH.D., 1957.
- DENNIS W. DOWELL, *Instructor of Sociology*  
B.S., Purdue University, 1957; M.S., 1959.
- NORMA E. DUNN, *Instructor of English*  
B.A., Madison College, 1946; M.A., University of Pennsylvania, 1953.
- THOMAS H. DYER, *Instructor of Mathematics*  
B.S., U.S. Naval Academy, 1924.
- GERALD G. EGGERT, *Instructor of History*  
B.A., Western Michigan University, 1949; M.A., University of Michigan, 1951; PH.D., 1960.
- WILLIAM P. ELLIS, *Instructor of Speech and Dramatic Art*  
B.S., Towson Teachers College, 1954; M.A., Northwestern University, 1956.
- GEORGE FOSS, JR., *Instructor of Music*
- JACOB G. FRANZ, *Instructor of Sociology*  
B.A., Southwestern Oklahoma State Teachers College, 1935; M.A., Columbia University, 1939.

RALPH D. FREENY, *Instructor of Art*  
B.A., University of Maryland, 1959.

BERNARD FUSARO, *Instructor of Mathematics*  
B.A., Swarthmore College, 1950; M.A., Columbia University, 1954.

HELEN GARSTENS, *Instructor of Mathematics*  
A.B., Hunter College, 1932.

MEYER GREENBERG, *Instructor of Foreign Languages*  
B.A., Yeshiva University, 1934; M.A., Jewish Institute of Religion, 1944; PH.D., University of Maryland, 1956.

ROBERT S. HALLER, *Instructor of English*  
B.A., Amherst College, 1955; M.A., Princeton University, 1957.

PIERRE T. HAN, *Instructor of English*  
B.A., Catholic University of America, 1951; M.A., Columbia University, 1952.

ROBERT R. HARE, *Instructor of English*  
B.A., Ohio State University, 1936; M.A., University of Delaware, 1957.

DONALD F. HENZE, *Instructor of Philosophy*  
B.A., University of Wisconsin, 1950; PH.D., 1954.

HAROLD J. HERMAN, *Instructor of English*  
A.B., University of Maryland, 1952.

JOSEPH A. JAMES, *Instructor of Foreign Languages*  
A.B., Bates College, 1925; M.A., West Virginia University, 1930.

RODERICK H. JELLEMA, *Instructor of English*  
B.A., Calvin College, 1951; Post Graduate Diploma in English Studies, Edinburgh University, 1954.

CAROL R. KARP, *Instructor of Mathematics*  
B.A., Manchester College, 1948; M.A., Michigan State University, 1950; PH.D., University of Southern California, 1959.

HAMILL T. KENNY, *Instructor of English*  
B.A., Columbia University, 1924; M.A., 1925; PH.D., University of Maryland, 1951.

DELYNN M. KEVER, *Instructor of English*  
B.A., University of Oklahoma, 1951; M.A., 1957.

F. DONALD LAWS, *Instructor of Sociology*  
B.A., Hobart College, 1953; M.A., University of Maryland, 1955.

CHARLES N. LEE, *Instructor of Foreign Languages*  
B.A., University of Maryland, 1955; M.A., 1958.

GUYDO R. LEHNER, *Instructor of Mathematics*  
B.S., Loyola of Chicago, 1951; M.S., University of Wisconsin, 1951; PH.D., 1957.

LEO R. LEMAIRE, *Instructor of Foreign Languages*  
ABBITUR, Frankfort, 1926.

## Faculty

INDA LEPSON, *Instructor of Mathematics*

B.A., New York University, 1941; M.A., Columbia University, 1945.

PERRY LEVINSON, *Instructor of Sociology*

B.A., Western Maryland College, 1951; M.A., University of Pennsylvania, 1953.

SHUH-YIN LU MAR, *Instructor of Mathematics*

B.A., Ginling College, 1928; M.S., Mount Holyoke, 1932.

JUSTIN G. MAC CARTHY, *Instructor of Mathematics*

B.A., St. John's University, 1936; PH.D., University of Pittsburgh, 1955.

JOSEPH R. MARCHES, *Instructor of Sociology*

B.A., University of Minnesota, 1952; M.A., University of Maryland, 1953.

MARTHA J. MAXWELL, *Instructor of Psychology and Counselor in the University Counseling Center*

B.A., University of Maryland, 1946; M.A., 1948; PH.D., 1959.

MARY B. MC CLAY, *Instructor of Mathematics*

B.ED., Eastern Illinois State Teachers College, 1937; M.S., University of Illinois, 1941.

ROBERT M. MYERS, *Instructor of English*

B.A., Vanderbilt University, 1941; M.A., Harvard University, 1943; PH.D., Columbia University, 1945.

ELIZABETH NELSON, *Instructor of English*

B.A., University of Wisconsin, 1944; M.A., Mills College, 1949; M.A., University of Maryland, 1957.

ANN E. NORTON, *Instructor of Foreign Languages*

B.A., Syracuse University, 1945; M.A., 1947.

LEONARD M. PITT, *Instructor of History*

B.A., University of California at Los Angeles, 1952; M.A., 1955; PH.D., 1958.

OLIVER L. RICE, *Instructor of English*

B.MUS., Central College, 1943; M.A., Columbia University, 1949.

EVELYN G. ROGERS, *Instructor of English*

B.A., Northwestern University, 1940; M.A., University of Massachusetts, 1956.

MAY ROSWELL, *Instructor of Foreign Languages*

B.A., University of Dublin, 1936; CERTIFICATE OF TEACHING, University of Cambridge, 1937; M.A., University of Maryland, 1957.

PHILIP ROVNER, *Instructor of Foreign Languages*

B.A., The George Washington University, 1948; M.A., 1949; PH.D., University of Maryland, 1958.

FRANK L. RYAN, *Instructor of English*

B.A., University of Michigan, 1947; M.A., Boston College, 1948.

JOHN F. SCHMIDT, *Instructor of Sociology*

B.A., University of Chicago, 1941; M.A., 1946; PH.D., 1950.

- CHARLES J. SCHMITT, *Instructor of Speech and Dramatic Art*  
B.A., Montana State University, 1953; M.A., University of Wisconsin, 1956; M.F.A., 1959.
- ROSE SEDGEWICK, *Instructor of Mathematics*  
P.H.B., Brown University, 1925; M.A., 1927; P.H.D., 1929.
- JULIUS C. SHEPHERD, *Instructor of Mathematics*  
B.A., East Carolina Teachers' College, 1944; M.A., 1947.
- WILLIAM E. STAHR, *Instructor of English*  
B.A., University of Maryland, 1951; M.A., 1953.
- E. THOMAS STARCHER, *Instructor of Speech and Dramatic Art*  
B.A., University of Southern California, 1940; M.A., University of Arkansas, 1948.
- BARBARA H. STEVENSON, *Instructor of English*  
B.A., University of California, 1938; M.A., 1939.
- MARTHA C. STONE, *Instructor of English*  
B.S., IN ED., Southeast Missouri State College, 1927; M.A., University of Missouri, 1929.
- JOHN A. THOMAS, *Instructor of English*  
B.A., Brigham Young University, 1952; M.A., 1953.
- PAUL TRAVER, *Instructor of Music*  
B.MUS., Catholic University of America, 1955; M.MUS., 1957.
- BETTY R. VANDERSLICE, *Instructor of Mathematics*  
B.A., Upsala College, 1945; M.A., University of Maryland, 1948.
- JAMES WALT, *Instructor of English*  
B.A., University of Minnesota, 1936; M.A., University of Michigan, 1937; P.H.D., 1955.
- CATHERINE M. WEAVER, *Instructor of English*  
B.A., University of Michigan, 1918; M.A., Texas Christian University, 1929.
- PAUL WARREN WHITNEY, *Instructor of English*  
B.A., University of Pennsylvania, 1950; M.A., University of Maryland, 1952.
- JOHN M. WILSON, *Instructor of Sociology*  
B.J., University of Missouri, 1954; M.A., University of Maryland, 1958.
- JACQUELINE L. ZEMEL, *Instructor of Mathematics*  
B.S., Queens College, 1949; M.A., Syracuse University, 1951.

### *Assistant Instructors*

- DELMAR C. ANDERSON, *Assistant Instructor of Speech and Dramatic Art*  
B.S., The Ohio State University, 1957; M.A., 1958.
- JAMES WARD ARMACOST, *Assistant Instructor of Speech and Dramatic Art*  
B.A., University of Maryland, 1956; M.A., University of North Carolina, 1959.

## Faculty

- NANCY T. CHAN, *Assistant Instructor of Speech and Dramatic Art*  
B.A., Denison University, 1957.
- BETTY J. COLVIN, *Assistant Instructor of Speech and Dramatic Art*  
B.A., Allegheny College, 1955; M.A., University of Pittsburgh, 1958.
- L. DENTON CREWS, JR., *Assistant Instructor of Speech and Dramatic Art*  
B.A., David Lipscomb College, 1959.
- DAGMAR R. HENNEY, *Assistant Instructor of Mathematics*  
B.S., University of Miami, 1954; M.S., 1956.
- SARA KILE, *Assistant Instructor of Speech*  
B.A., Ohio State University, 1958; M.A., 1959.
- HERBERT E. RODGERS, *Assistant Instructor of Speech and Dramatic Art*  
B.A., Franklin College, 1956; M.S., Purdue University, 1958.
- BILLY BRUCE WAGENER, *Assistant Instructor of Speech and Dramatic Art*  
B.A., Muskingum College, 1956; M.A., Ohio State University, 1957.
- GLENN J. WOLFE, *Assistant Instructor of Speech and Dramatic Art*  
B.S., Eastern Illinois University, 1955; M.A., State University of Iowa, 1959.

## Lecturers

- EDWARD W. BAKER, *Lecturer in Zoology*  
B.S., University of California, 1936; PH.D., 1938.
- JOSEPH V. BRADY, *Lecturer in Psychology*  
B.S., Fordham University, 1943; PH.D., University of Chicago, 1951.
- JOSEPH H. CAMIN, *Lecturer in Zoology*  
B.S., Ohio State University, 1946; M.S., 1947; PH.D., 1951.
- GEORGE D. CAUSEY, *Lecturer of Speech and Dramatic Art*  
B.A., University of Maryland, 1950; M.A., 1951; PH.D., Purdue University, 1954.
- EDWIN R. SHUTTS, *Lecturer of Speech and Dramatic Art*  
B.A., Indiana State Teachers' College, 1933; M.A., Northwestern University, 1947;  
PH.D., 1950.
- ABRAHAM SINKOV, *Lecturer in Mathematics*  
B.S., City College of New York, 1927; M.A., Columbia University, 1929; PH.D.,  
George Washington University, 1933.
- EARL R. STADTMAN, *Lecturer in Microbiology*  
B.S., University of California, 1942; PH.D., 1949.
- HAROLD L. WILLIAMS, *Lecturer of Speech and Dramatic Art*  
A.B., University of Nebraska, 1944; PH.D., University of Minnesota, 1951.



### Assistants

- GEORGE W. ANDREWS, *Chemistry*  
 GEORGE W. EASTMENT, *Microbiology*  
 WILLIS F. HARVILL, *Chemistry*  
 JOAN S. HERRELL, *Chemistry*  
 CHIEH HO, *Physics*  
 MARY JO MCGOVERN, *Chemistry*  
 DELYS SWAIN, *Chemistry*  
 CAROL L. THOMPSON, *Chemistry*

### Graduate Fellows

- JOHN REIDMAIER, *Chemistry*  
 B.S., Carnegie Institute of Technology, 1957.

### Teaching Fellows

- AUGUST D. KUCHTA, *DuPont Teaching Fellow in Chemistry*  
 B.S., Pennsylvania State University, 1953.  
 HOWARD E. RUSKIE, *Chemistry*  
 B.S., Fordham University, 1956.

### Research Fellows

- STANLEY AKS, *Physics*  
 B.S., Brooklyn Polytechnic Institute, 1957.  
 ROBERT J. ARGAUER, *Chemistry*  
 B.S., Canisius College, 1958.  
 JAMES W. BARNHART, *Chemistry*  
 B.S., Washington Missionary College, 1957.  
 RAYMON BAYLOUNY, *Chemistry*  
 B.S., Seton Hall, 1954; M.S., University of Maryland, 1958.  
 EDWARD FETTER, *Chemistry*  
 B.A., LaSalle University, 1955; M.S., University of Maryland, 1958.  
 ROBERT L. FORWARD, *Physics*  
 B.S., University of Maryland, 1954; M.S., University of California, 1958.  
 PHILIP H. GRAHAM, *Chemistry*  
 B.S., Washington State College, 1955; M.S., University of Maryland, 1959.  
 STEPHEN C. HIRSCH, *Chemistry*  
 B.S., Brooklyn Polytechnic Institute, 1958.

## Faculty

- JOHN R. HOOTON, *Chemistry*  
B.S., East Texas State Teachers College, 1951; M.S., Texas A. & M., 1953.
- LAWRENCE G. ISAACS, *Chemistry*  
B.S., College of St. Thomas, 1956.
- ROBERT B. ISAACSON, *Chemistry*  
B.S., City College of New York, 1956.
- DONALD G. JONES, *Chemistry*  
B.S., Washington Missionary College, 1957.
- JAMES M. KNIGHT, *Physics*  
B.S., Spring Hill College, 1954.
- NOBUHIKO KUROKE, *Chemistry*  
B.S., Kyoto University, 1943; PH.D., 1955.
- VICTOR LATORRE-AGUILAR, *Physics*  
B.S., San Marcos University, Lima, Peru, 1957.
- RAY A. MALZAHN, *Chemistry*  
B.A., Gustavus Adolphus, 1951; M.S., University of North Dakota, 1953.
- RICHARD MAYER, *Chemistry*  
B.S., St. Johns University, 1955.
- EILERT A. OFSTEAD, *Chemistry*  
B.S., St. Johns University, 1955.
- SHIRLEY M. READ, *Chemistry*  
B.S., University of Maryland, 1956.
- REYNOLD M. SHONO, *Chemistry*  
B.S., University of Illinois, 1952; M.S., University of Hawaii, 1957.
- DEREK STEELE, *Chemistry*  
B.SC., Birmingham University, 1956; PH.D., 1959.
- VIGDOR TOPLITZ, *Physics*  
B.S., M.I.T., 1958.
- HAROLD G. THOMPSON, *Chemistry*  
B.S., Wagner College, 1954; M.S., Syracuse University, 1956.
- JOHN VAN DE CASTLE, *Chemistry*  
B.S., St. John's University, 1955.
- HARRY W. WEBER, JR., *Chemistry*  
B.A., Johns Hopkins University, 1956.
- FRANCIS E. WELSH, *Chemistry*  
B.S., Rockhurst College, 1954.

JOSEPH XAVIER, *Chemistry*

B.SC., Madras University (India), 1948; M.SC., Banaras Hindu University, 1952;  
PH.D., Calcutta University, 1958.

KUNIHICO YANO, *Chemistry*

B.S., Shizuoka University, 1953.

### *Research Assistants*

ALBERT ALTMAN, *Physics*

B.S., Brooklyn College, 1954; M.S., University of Maryland, 1958.

LOUIS S. ARONICA, *Physics*

B.S., Pennsylvania State University, 1955.

JOHN BARACH, *Physics*

B.A., Princeton University, 1957.

MARIANO V. BAUER, *Physics*

B.S., University of Mexico, 1956.

EDWARD E. BEASLEY, *Physics*

B.S., U. S. Naval Academy, 1944; M.S., University of Maryland, 1957.

ROBERT BENTO, *Physics*

B.S., Providence College, 1956; M.S., University of Maryland, 1959.

HANS BERG, *Physics*

ABITURE, Gymnasium, Flensburg, Germany, 1951; Staatsexamen, Universitat Kiel, Germany, 1957.

ANAND BHATIA, *Physics*

B.S., Delhi University, India, 1953; M.S., 1955.

DWIJENDRA L. BHATTACHARYA, *Physics*

B.S., Presidency College, Calcutta, India, 1944; M.S., University College of Science and Technology, Calcutta, India, 1946.

GEORGE R. BLAKLEY, *Mathematics*

A.B., Georgetown University, 1954.

YUNG-YI CHEN, *Physics*

B.S., University of Maryland, 1955.

LAN-KEH CHI, *Mathematics*

LEOPOLDO COLIN, *Physics*

B.S. IN CHEMISTRY, University of Mexico, 1953; B.S. IN PHYSICS, 1954; PH.D., University of Maryland, 1959.

LANGDON T. CRANE, *Physics*

B.A., Amherst University, 1952; M.S., Brown University, 1954.

ASHLEY A. CUNNINGHAM, *Physics*

A.B., University of California, 1957.

## Faculty

- VITALY DANCHENKO, *Physics*  
B.S., Beria College, 1954.
- JOHN A. DAVIES, *Physics*  
B.S., University of Maryland, 1953; M.S., 1954.
- RICHARD DAY, *Physics*  
B.A., Villa Madonna College, 1957.
- ALVIN D. DINHOFER, *Physics*  
B.S., Brooklyn College, 1954.
- WALTER R. DOWDLE, *Microbiology*  
B.S., University of Alabama, 1955; M.S., 1956.
- CONSTANTINE EFTHYMIU, *Microbiology*  
B.S., Athens Agricultural College, 1952; M.S., University of Maryland, 1958.
- JACK R. GLEASON, *Physics*  
B.A., Bowling Green State University, 1957.
- JOSE L. GRANDA, *Chemistry*  
B.A., University of Oviedo (Spain), 1950; M.D., University of Madrid, 1956.
- NEWTON I. GREENBERG, *Physics*  
B.S., Brooklyn College, 1957.
- CHARLES T. HALL, *Microbiology*  
B.S., University of Maryland, 1954.
- WILLIAM HARTE, *Physics*  
B.S., Providence College, 1954; M.A., Dartmouth College, 1956.
- GEORGE L. HINDS, *Physics*  
B.A., Bowdoin College, 1955.
- MORTON KAGAN, *Physics*  
B.S., Case Institute of Technology, 1955; M.S., University of Maryland, 1957.
- ROGER P. KOHIN, *Physics*  
B.S., University of Notre Dame, 1953.
- HOWARD KOPP, *Molecular Physics*
- YUNG-CHANG LEE, *Physics*  
B.S., National Taiwan University, China, 1955.
- ALLEN M. LENCHEK, *Physics*  
B.S., University of Chicago, 1957.
- LUC LEPLAE, *Physics*  
LICENCIE DE SCIENCE PHYSIQUE, University of Louvain Belgium, 1955.
- FRANK S. LEVIN, *Physics*  
B.A., Johns Hopkins University, 1955.

- FUK WING LI, *Physics*  
B.S., National Taiwan University, Taipei, Taiwan, 1957.
- REIMER H. LINCKE, *Physics*  
B.S., Vordiplom, University of Kiel, Germany, 1957; M.S., University of Maryland, 1959.
- CARL A. LUDEMANN, *Physics*  
B.S., Brooklyn College, 1956.
- WILLIAM H. LUPTON, *Physics*  
B.A., University of Virginia, 1950.
- MORTON LUTZKY, *Physics*  
B.S., City College of New York, 1951; M.S., University of Maryland, 1959.
- JAGADISHWAR MAHANTY, *Physics*  
B.S., Ravenshaw College, 1949; M.S., Calcutta University, 1951; PH.D., University of Maryland, 1959.
- SAROJINI MAHANTY, *Physics*  
B.S., Delhi University, India, 1949; M.S., 1951.
- KENNETH MC CARTY, *Molecular Physics*  
B.S., Lehigh University, 1949; M.S., 1951.
- KISHOR K. MEHTA, *Physics*  
B.S., St. Xavier's College, Bombay, India, 1958.
- KISHIN MOORJANI, *Physics*  
B.S., Delhi College, India, 1955; M.S., 1957.
- THOMAS H. MORRISON, *Microbiology*  
A.B., Williams College, 1951; M.S., University of Maryland, 1958.
- STAN M. NEUDER, *Physics*  
B.A., Brooklyn College, 1955; M.S., University of Maryland, 1959.
- BARRY W. NINHAM, *Physics*  
B.S., University of Western Australia, 1956; M.S., 1958.
- GOETZ OERTEL, *Physics*  
ABITUR, Oberschule, Heilbronn, Germany, 1953; VORDIPLOM, University of Kiel, Germany, 1956.
- BINYORK OUYANG, *Physics*  
B.S., National Taiwan University, China, 1955.
- JOGESH C. PATI, *Physics*  
B.S., Ravenshaw College, Cuttack, India, 1955.
- LOUIS J. POUDRE, *Physics*
- MEDICHARLA J. RAO, *Physics*  
B.S., Andhra University, India, 1954; M.S., 1955.



## Faculty

FRANCIS A. RYDER, *Physics*

B.S., St. Joseph's College, 1957.

MITTER P. SAWHNEY, *Physics*

B.S., HansRaj College, Delhi, India, 1953; M.S., Delhi University, Delhi, India, 1955.

KWANG Y. SHEN, *Physics*

B.S., University of Maryland, 1953.

JUNKICHI SOHMA, *Physics*

B.S., Hokkaido Imperial University, Japan, 1957.

ROBERT M. SORENSEN, *Mathematics*

B.S., University of Maryland, 1956.

YE-YUNG TENG, *Physics*

B.S., National Taiwan University, Formosa, 1953.

ERNEST W. STALDER, *Physics*

B.S., Northwestern University, 1957.

STUART P. SUSKIND, *Microbiology*

B.S., Duke University, 1957.

VIGDOR L. TEPLITZ, *Physics*

S.B., Massachusetts Institute of Technology, 1958.

EVAN H. WALKER, *Physics*

B.S., University of Alabama, 1955; M.S., 1956.

WILLIAM D. WALLACE, *Physics*

A.B., Eastern Michigan College, 1955.

WILFRED L. WAYLAND, *Molecular Physics*

ROBERT C. WENTWORTH, *Physics*

B.A., Swarthmore College, 1953; PH.D., University of Maryland, 1960.

ROBERT M. WINTER, *Physics*

B.S., St. John's University College, 1954.

ALFRED C. WU, *Physics*

B.S., Wheaton College, 1955.

## Graduate Assistants

JENNIFER ADAMS, *English*

B.A., University of Bristol, England, 1955.

YURDANUR AKOVALI, *Physics*

B.S., Institute of Experimental Physics, University of Ankara, Turkey, 1956; M.S., University of Ankara, Turkey, 1958.

ALFRED W. ALBERTS, *Zoology*

B.S., Brooklyn College, 1953.

- R. F. ALLEN, *Foreign Languages*  
B.A., University of Oklahoma, 1956; M.A., University of Maryland, 1958.
- MOHAMED AL-MASHAT, *Sociology*  
School of Law, Iraq, LAW DIPLOMA, 1950; A.B., University of California (Berkeley), 1955; M.A., 1957.
- LESLIE W. AYRES, *Mathematics*  
B.A., Bennington College, 1953.
- CHARLES F. BAER, *Zoology*  
B.A., Adrian College, 1959.
- CORNELIUS W. BARRY, *Zoology*  
B.S., St. John Fisher College, 1956.
- REZA BEHIN, *Zoology*  
B.S., Tehran University, 1956.
- MARION BENNETT, *Chemistry*  
A.B., Barnard College, 1959.
- HAROLD C. BERRY, *Mathematics*  
B.S., University of Maryland, 1955.
- ELEANOR C. BILLER, *Zoology*  
B.S., University of Maryland, 1959.
- LEROY C. BLANKENSHIP, *Microbiology*  
B.S., University of Maryland, 1954.
- BRUCE A. BLOOMFIELD, *Mathematics*  
B.A., University of Oregon, 1957.
- JEROME BOHSE, *Physics*  
B.S., University of Dayton, 1959.
- ROBERT T. BOND, *Chemistry*  
B.A., Southern Mississippi College, 1954.
- CHARLES J. BONTEMPO, *Philosophy*  
B.A., University of Maryland, 1952.
- JOHN V. BOTSCHELLER, *Chemistry*  
B.S., City College of New York, 1956; M.S., University of Minnesota, 1959.
- BENJAMIN BRASHEARS, *Sociology*  
A.A., University of Boston, 1955; B.A., Indiana University, 1957.
- RICHARD B. BRIAN, *Mathematics*  
B.S., Grove City College, 1953.
- JOHN M. BRIDGES, *Physics*  
B.S., Alabama Polytechnic Institute, 1957.

## Faculty

- EDWARD R. BURKE, *Physics*  
B.S., St. Joseph's College, 1957.
- JOHN J. BURKE, *Mathematics*  
B.A., St. Peter's College, 1958.
- STEVE A. BUTTER, *Chemistry*  
B.S., Brooklyn College, 1959.
- RICHARD T. CAMARRA, *Chemistry*  
B.S., Northeastern University, 1958.
- WALTER CHAMBERS, *English*  
B.A., University of Maryland, 1959.
- EDDIE CHAN, *Microbiology*  
B.A., Texas Western College, 1954; M.A., University of Texas, 1957.
- DOROTHY CHANDLER, *Physics*  
B.A., Goucher College, 1959.
- CHIN-TSE CHEN, *Physics*  
B.S., National Taiwan University, Taipei, Taiwan, 1951.
- EDWARD C. CHEVALIER, *Chemistry*  
B.S., Clarkson College of Technology, 1958.
- GARY D. CHRISTIAN, *Chemistry*  
B.S., University of Oregon, 1959.
- SUE-NING CHU, *Zoology*  
B.S., Barat College of the Sacred Heart, 1955.
- JACK L. CLINE, *Mathematics*  
B.S., Frostburg State Teachers College, 1954.
- BETTE M. CODER, *Zoology*  
B.S., University of Maryland, 1959.
- EILEEN J. COHEN, *English*  
B.S., University of Maryland, 1953; M.A., 1958.
- LOWELL R. COMSTOCK, *Chemistry*  
B.S., Concord College, 1959.
- E. BRINSON CONERLY, *Chemistry*  
B.S., Millsaps College, 1959.
- RITA S. COOK, *Foreign Languages*  
GYMNASIUM MATURA, 1932; PH.D., University of Vienna, 1938.
- BARBARA A. COVINGTON, *English*  
B.A., University of Maryland, 1959.
- JAMES ROBERT CULLEN, *Physics*  
B.S., St. John's University, 1958.

- JAMES W. DEICHERT, *Chemistry*  
B.A., Gettysburg College, 1959.
- CHARLES W. DICKINSON, *Chemistry*  
B.CHEM., University of Minnesota, 1959.
- ADRIAN ANATOLE DOLINSKY, *Physics*  
B.S., Fordham University, 1958.
- ANTHONY F. DORRZAPF, *Chemistry*  
B.S., St. Peters College, 1959.
- EDWARD DOYLE, *Sociology*  
B.A., University of Maryland, 1958.
- JAMES B. DUDLEY, *Sociology*  
B.A., Beloit College, 1958.
- VIRGINIA A. DUKE, *Speech and Dramatic Art*  
B.S., University of Maryland, 1959.
- KENNETH LEE ECKERLE, *Physics*  
B.S., Indiana State Teachers' College, 1958.
- ALENA ELBL, *Zoology*  
B.S., University of Maryland, 1954; M.S., 1958.
- C. ASHLEY ELLEFSON, *English*  
B.S., State College, LaCrosse, Wis., 1952; M.A., University of Iowa, 1955.
- EDWARD G. ELSTE, JR., *Chemistry*  
B.A., Western Maryland College, 1959.
- HUOO-LONG FANN, *Physics*  
B.S., Taiwan Normal University, Taipei, Taiwan, 1956.
- CAROL J. GEARTY, *Chemistry*  
B.S., West Virginia Wesleyan University, 1959.
- THEO. FELSENTREGER, *Mathematics*  
B.S., Chem. Engr., University of Maryland, 1958.
- LEONARD W. FINE, *Chemistry*  
B.S., Marietta College, 1958.
- DONALD H. FLANDERS, *Mathematics*  
B.A., Reed College, 1958.
- HENRY E. FLEMING, *Mathematics*  
B.A., Harpur College, 1958.
- HELEN C. FLOEGE, *Zoology*  
B.S., Radford College, 1959.
- RICHARD FONG, *Physics*  
B.A., Corpus Christi College, University of Cambridge, 1957.

## Faculty

- MELVIN FRIEDMAN, *Physics*  
B.S., Rensselaer Polytechnic Institute, 1959.
- ROBERT GAUNTT, *Mathematics*  
B.S., Purdue University, 1956; M.S., 1958.
- WILLARD GELLIS, *English*  
B.A., Hofstra College, 1958.
- THEODORE J. GEORGIAN, *Chemistry*  
A.B., Boston University, 1958.
- KENNETH A. GILMORE, *Zoology*  
B.S., Mississippi Southern College, 1959.
- DONALD S. GOCHBERG, *English*  
B.A., Bates College, 1955.
- JOSEPH P. GOLDBERG, *English*  
B.S., University of Maryland, 1952.
- LEONARD GOLDINGER, *English*  
B.A., University of Maryland, 1956.
- MILTON B. GOLDINGER, *Philosophy*  
B.A., University of Maryland, 1958.
- MARGARET A. GRAYSON, *Zoology*  
B.S., University of Massachusetts, 1948; M.S., 1954.
- EDWARD F. GROUP, *Chemistry*  
B.A., Hamilton University, 1957.
- DOUGLAS HALL, *Foreign Languages*  
B.A., Wake Forest College, 1952.
- JAMES M. HARDIN, *Chemistry*  
B.A., Harvard University, 1959.
- ERNEST A. HARRISON, *Chemistry*  
A.B., Boston University, 1957.
- JOHN R. HASTINGS, *Physics*  
A.B., Princeton University, 1955.
- NORBERT A. HEINLY, *Chemistry*  
B.S., Northwestern University, 1957.
- PAUL W. HEEMANN, *English*  
B.A., University of North Carolina, 1958; M.A., 1959.
- LETA JANE HOLMAN, *Zoology*  
B.S., Texas Technological College, 1943.
- IVAN HUBER, *Zoology*  
A.B., Cornell University, 1954.



- RAYMOND S. HUDSON, *Chemistry*  
A.B., Washington and Lee University, 1953.
- HARRY W. HUIZINGA, *Zoology*  
B.S., Michigan State University, 1956.
- HENRY W. HURLBUTT, *Zoology*  
B.A., University of Connecticut, 1955; M.S., 1957.
- CHARLES J. HUSFELT, *English*  
B.A., University of Maryland, 1959.
- KAREN JOHNSON, *Mathematics*  
B.S., Moravian College, 1957.
- DONALD E. JOHNSTON, *Zoology*  
B.S., Wayne University, 1956.
- DONALD G. JONES, *Chemistry*  
B.S., Washington Missionary College, 1957.
- DUVALL A. JONES, *Zoology*  
B.A., Western Maryland College, 1955.
- EDWARD M. JOZWICKI, *Chemistry*  
B.S., Davis and Elkins College, 1959.
- KALPATARU KANUNGO, *Zoology*  
I.SC., Ravenshaw College, 1949; B.SC., 1952; M.SC., University of Allahabad, 1955.
- JOHN E. KARL, JR., *Zoology*  
B.A., Allegheny College, 1951.
- OTHMAR E. KECKSTEIN, *Physics*  
B.S., University of Technology Graz, Austria, 1958.
- LYDIA D. KELLOGG, *English*  
ED.M., Harvard Graduate School of Education, 1956.
- THOMAS E. KENNY, *Chemistry*  
B.S., Fordham University, 1955.
- JOHN C. KERESZTESY, *Chemistry*  
B.S., Middlebury College, 1958.
- FRANKLIN P. KOONTZ, *Microbiology*  
B.S., University of Maryland, 1958.
- SIMON R. KRAFT, *Mathematics*  
B.A., George Washington University, 1955; M.A., University of Maryland, 1957.
- NOEL R. KRIEG, *Microbiology*  
B.A., University of Connecticut, 1955; M.S., 1957.
- ALBERT R. LANDGREBE, *Chemistry*  
B.S., Fordham University, 1957.

## Faculty

RICHARD M. LANE, *Zoology*  
B.S., Loyola College, 1959.

JOHN D. LEIDICH, *Chemistry*  
A.B., Gettysburg College, 1959.

MADONNA LETZRING, *English*  
B.A., College of St. Scholastica, 1957.

BENJAMIN H. LIM, *Chemistry*  
B.A., Oberlin College, 1952; B.S., University of Kentucky, 1957.

CHARLES L. LIOTTA, *Chemistry*  
B.S., Brooklyn College, 1959.

WALLACE LUSK, *Foreign Languages*  
B.A., Walla Walla College, 1931; M.A., University of Southern California, 1934.

DOUGLAS MAASS, *Chemistry*  
B.SC., University of London, 1956; M.SC., 1959.

ELLIS G. MACLEOD, *Zoology*  
B.S., University of Maryland, 1955.

BARBARA L. MAGAW, *English*  
B.A., Louisiana State University, 1957.

EDWARD C. MANGOLD, *Physics*  
B.S., Rockhurst College, 1959.

JAMES S. MARCHESE, *Chemistry*  
A.B., Boston University, 1957; M.S., Northeastern University, 1959.

JOHN MARKO, *Physics*  
B.S., Massachusetts Institute of Technology, 1959.

PETER H. MASERICK, *Mathematics*  
B.S., University of Maryland, 1955; M.A., 1957.

ALDO MAZZELLA, *Physics*  
B.A., Pomona College, 1959.

PATRICIA A. MC CANN, *Chemistry*  
B.A., Dunbarton College of The Holy Cross, 1959.

VINCENT C. MC CARTHY, *Zoology*  
B.A., Toronto University, 1953.

RICHARD E. MC GILL, *Mathematics*  
B.A., Wooster College, 1954.

TERRENCE P. MC GOVERN, *Chemistry*  
B.S., University of Maryland, 1958.

- JAMES C. MC GRODDY, *Physics*  
B.S., St. Joseph's College, Philadelphia, 1958.
- DALE A. MCKENZIE, *Chemistry*  
B.S., University of Rhode Island, 1956.
- CHARLES E. MEHLING, *Zoology*  
B.A., Loyola College, Baltimore, 1954.
- JOHN R. MERKEL, *English*  
B.A., University of Maryland, 1956; M.A., 1959.
- FREDERICK T. METCALF, *Mathematics*  
B.A., Lake Forest College, 1957.
- RAMAKANT MHATRE, *Chemistry*  
M.SC., Siddharth College (Bombay), 1955; M.SC., Seth G.S. Medical School, 1957.
- C. DAVID MILLER, *Chemistry*  
A.B., Columbia College, 1952; M.S., University of Maryland, 1959.
- ERNEST J. MONCADA, *English*  
B.A., University of Miami, 1952.
- REYNALDO MORALES, *Physics*  
B.S., St. Mary's College, 1959.
- HARVEY MOREINES, *English*  
B.A., Brooklyn College, 1958.
- JOHN MUTCHLER, *Chemistry*  
B.S., Cornell University, 1959.
- RAPHAEL C. MYERS, *Chemistry*  
B.A., University of Virginia, 1957.
- NORMAN A. NIELSEN, *Chemistry*  
B.S., State College of Washington, 1958.
- KATHERINE A. O'NEIL, *Chemistry*  
B.S., Allegheny College, 1959.
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A.B., Queens College, 1958.
- JOHN C. PARKER, *Zoology*  
B.S., University of Maryland, 1957.
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B.S., University of Baroda, India, 1956.
- BARBARA C. PECK, *English*  
B.A., University of Michigan, 1958.
- ANTHONY R. PICCIOLO, *Zoology*  
B.S., University of Maryland, 1955.

## Faculty

- FRANCIS X. POWELL, *Chemistry*  
B.S., University of California, 1956.
- DAVID A. POWER, *Microbiology*  
B.S., University of Maryland, 1954; M.S., 1959.
- PHILIP J. PROVOST, *Microbiology*  
B.A., University of Connecticut, 1957; M.S., University of Maryland, 1959.
- HERBERT B. PUTZ, *Mathematics*  
B.S., Rensselaer Polytechnic Institute, 1958.
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B.A., Randolph-Macon Woman's College, 1958.
- JOHN REDDO, VI, *Chemistry*  
B.S., George Washington University, 1959.
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B.S., Seoul National University, 1954; M.A., Emory University, 1957.
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B.A., Reed College, 1958.
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B.A., Centre College, 1951; M.S., University of Maryland, 1956; PH.D., 1959.
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B.A., Central College, 1958.
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B.E.E., Brooklyn Polytechnic Institute, 1958.
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B.S., Banaras Hindu University, 1952; M.S., 1954.
- THOMAS SAVAGE, *Zoology*  
B.S., Cornell University, 1957.
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B.A., Loyola College, 1959.
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B.A., Hood College, 1959.
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B.S., University of Illinois, 1958.
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B.S., Moravian College, 1958.
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A.B., Hunter College, 1956; M.A., Emory University, 1957.
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B.S., State University of New York, Cortland, 1959.

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B.S., National Taiwan University, 1957.
- CHIA-HUI SHIH, *Physics*  
B.S., National Taiwan University, 1957.
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B.S., Villanova University, 1958.
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B.S., St. John's College, 1958.
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B.A., University of Maine, 1951; M.A., 1958.
- JOHN F. STOUT, *Zoology*  
B.A., Washington Missionary College, 1957.
- JOEL M. STUTMAN, *Chemistry*  
B.SC., Philadelphia College of Pharmacy and Science, 1956.
- JIN-CHEN SU, *Mathematics*  
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A.B., Western Maryland College, 1955.
- STUART P. SUSKIND, *Chemistry*  
B.S., Duke University, 1957.
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B.A., American University, 1956.
- MELVIN C. TEWS, *Mathematics*  
B.S., Trinity College, 1957.
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B.S., Union College, 1950.
- WILLIAM F. TIMMERMAN, JR., *Zoology*  
B.A., Washington Missionary College, 1953.
- ALLEN H. TRENCHARD, *Physics*  
B.S., Loyola University, 1951.
- BALLARD E. TROY, *Physics*  
B.S., Duke University, 1957.



## Faculty

- ANGELO A. VOLPE, *Chemistry*  
B.S., Brooklyn College, 1959.
- ROBERT E. WALDEN, *Chemistry*  
B.A., Hendrix College, 1959.
- BETTY M. WALLACE, *Chemistry*  
A.B., Washington University, 1942.
- GRACE LEE WATSON, *Zoology*  
A.B., Trinity College, 1956.
- RICHARD J. WEINACHT, *Mathematics*  
B.S., University of Notre Dame; M.S., Columbia University.
- BETTY PERRY WHALEY, *English*  
B.A., University of North Carolina, 1942.
- RICHARD D. WIDMAN, *Zoology*  
B.S., Georgetown University, 1952.
- PHILETUS P. WILLIAMS, JR., *Microbiology*  
B.S., Davis and Elkins, 1955; M.S., University of Maryland, 1959.
- HOWARD WILSON, *Mathematics*  
B.E.E., George Washington University, 1953.
- BRUCE E. WITZEL, *Chemistry*  
B.S., Wagner College, 1958.
- THERESA S. WU, *Physics*  
B.S., National Taiwan University, 1958.
- JOSEPH ZAMBERNARDI, *Zoology*  
A.B., University of Alabama, 1952; M.S., 1956.
- ESTELLE C. ZOLL, *Chemistry*  
A.B., Boston University, 1957; M.A., 1959.

## Baltimore Faculty

- ADELE B. BALLMAN, *Assistant Professor of English*  
B.A., Goucher College, 1926; PH.D., The Johns Hopkins University, 1935.
- LESLIE C. COSTELLO, *Assistant Professor of Zoology*  
B.S., University of Maryland, 1952; M.S., 1954; PH.D., 1957.
- CLARENCE T. DEHAVEN, *Instructor of Speech and Dramatic Art*  
A.B., Western Maryland College, 1930; M.A., Johns Hopkins University.
- GAYLORD ESTABROOK, *Professor of Physics*  
B.S., Purdue University, 1921; M.S., Ohio State University, 1922; M.S., Johns Hopkins University, 1930; PH.D., University of Pittsburgh, 1932.

CHARLES E. HOOPER, *Graduate Assistant in Physics*  
B.S., Dartmouth College, 1954.

FRANCIS M. MILLER, *Associate Professor of Chemistry*  
B.S., Western Kentucky State College, 1946; PH.D., Northwestern University, 1949.

ALLIE W. RICHESON, *Professor of Mathematics*  
B.S., University of Richmond, 1918; M.A., Johns Hopkins University, 1925; PH.D., 1928.

CLAIRE S. SCHRADIECK, *Assistant Professor of Foreign Languages*  
B.A., Goucher College, 1916; PH.D., Johns Hopkins University, 1919.



COLLEGE  
of  
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Catalog Series 1960-1961



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# UNIVERSITY CALENDAR

## FALL SEMESTER 1959

### JANUARY 1960

- 4 Monday—Christmas Recess Ends 8 a.m.
- 20 Wednesday—Pre-Examination Study Day
- 21-27 Thursday to Wednesday, inclusive—Fall Semester Examinations

## SPRING SEMESTER 1960

### FEBRUARY

- 1-5 Monday to Friday—Spring Semester Registration
- 8 Monday—Instruction Begins
- 22 Monday—Washington's Birthday Holiday

### MARCH

- 25 Friday—Maryland Day

### APRIL

- 14 Thursday—Easter Recess Begins After Last Class
- 19 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 18 Wednesday—Military Day
- 26 Thursday—Pre-Examination Study Day

- May 27- } Friday to Friday, inclusive—Spring Semester Examinations
- June 3 }
  - 29 Sunday—Baccalaureate Exercises
  - 30 Monday—Memorial Day, Holiday

### JUNE

- 4 Saturday—Commencement Exercises

## SUMMER SESSION 1960

### JUNE 1960

- 27 Monday—Summer Session Registration
- 28 Tuesday—Summer Session Begins

### AUGUST

- 5 Friday—Summer Session Ends

## SHORT COURSES 1960

### JUNE 1960

- 20-25 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 8-13 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 6-9 Tuesday to Friday—Firemen's Short Course

# UNIVERSITY CALENDAR

## FALL SEMESTER 1960

### SEPTEMBER

- 12-16 Monday to Friday—Fall Semester Registration
- 19 Monday—Instruction Begins

### NOVEMBER

- 23 Wednesday—Thanksgiving Recess Begins After Last Class
- 28 Monday—Thanksgiving Recess Ends 8 a.m.

### DECEMBER

- 20 Tuesday—Christmas Recess Begins

### JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day Holiday
- 25 Wednesday—Pre-Examination Study Day
- Jan. 26- } Thursday to Wednesday, inclusive—Fall Semester Examinations
- Feb. 1 }

## SPRING SEMESTER 1961

### FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday Holiday

### MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

### APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 17 Wednesday—Military Day
- 30 Tuesday—Memorial Day, Holiday

### JUNE

- 2 Friday—Pre-Examination Study Day
- 4 Sunday—Baccalaureate Exercises
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 10 Saturday—Commencement Exercises

## SUMMER SESSION 1961

### JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

### AUGUST

- 4 Friday—Summer Session Ends

## SHORT COURSES 1961

### JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 7-12 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

# BOARD OF REGENTS

## and

### MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK	
<i>Chairman</i> .....	1966
McCormick and Company, 414 Light Street, Baltimore 2	
EDWARD F. HOLTER	
<i>Vice-Chairman</i> .....	1968
The National Grange, 744 Jackson Place, N.W., Washington 6	
B. HERBERT BROWN	
<i>Secretary</i> .....	1960
The Baltimore Institute, 10 West Chase Street, Baltimore 1	
HARRY H. NUTTLE	
<i>Treasurer</i> .....	1966
Denton	
LOUIS L. KAPLAN	
<i>Assistant Secretary</i> .....	1961
5800 Park Heights Avenue, Baltimore 15	
ENOS S. STOCKBRIDGE	
<i>Assistant Treasurer</i> .....	1960
10 Light Street, Baltimore 2	
THOMAS W. PANGBORN .....	1965
The Pangborn Corporation, Pangborn Blvd., Hagerstown	
THOMAS B. SYMONS .....	1963
Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	
C. EWING TUTTLE .....	1962
907 Latrobe Building, Charles and Read Streets, Baltimore 2	
WILLIAM C. WALSH .....	1968
Liberty Trust Building, Cumberland	
MRS. JOHN L. WHITEHURST .....	1967
4101 Greenway, Baltimore 18	

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Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

# OFFICERS OF ADMINISTRATION

## *Principal Administrative Officers*

WILSON H. ELKINS, *President*

B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936;  
D. PHIL., 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBAKE, *Dean of the Faculty*

B.S., State Teachers College, California, Pa., 1934; M.A., Ohio State University, 1936;  
PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

## *Emeritus*

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

## *Administrative Officers of the Schools and Colleges*

MYRON S. AISENBERG, *Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.



FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940;  
ED.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University  
of Denver, 1942; M.B.A. in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agricultural Experiment Station and Head, Department  
of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D.,  
University of Maryland, 1933.

ROGER HOWELL, *Dean of the School of Law*

B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland,  
1917.

WILBERT J. HUFF, *Director, Engineering Experiment Station*

B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale Uni-  
versity, 1917; D.SC. (HON.), Ohio Northern University, 1927.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945;  
PH.D., Pennsylvania State University, 1953.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

PAUL E. NYSTROM, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A.,  
Harvard University, 1948; D.P.A., 1951.

J. FREEMAN PYLE, *Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

LEON P. SMITH, *Dean of the College of Arts and Sciences*

B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930;  
Diplome de l'Institut de Touraine, 1932.

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Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929;  
PH.D., (HON.), University of Louisville, 1946.

### *General Administrative Officers*

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B.A., University of Maryland, 1930; M.S., 1931.

THEODORE R. AYLESWORTH, *Professor of Air Science and Head, Department of  
Air Science*

B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania, 1949.

NORMA J. AZLEIN, *Registrar*

B.A., University of Chicago, 1940.

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B.A., University of Minnesota, 1944.
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B.A., University of Maryland, 1938.
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- WILLIAM W. COBEY, *Director of Athletics*  
A.B., University of Maryland, 1930.
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B.S., University of Iowa, 1936; M.D., University of Iowa, 1926.
- GEARY F. EPPLEY, *Dean of Men*  
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
- GEORGE W. FOGG, *Director of Personnel*  
B.A., University of Maryland, 1926; M.A., 1928.
- ROBERT J. MCCARTNEY, *Director of University Relations*  
B.A., University of Massachusetts, 1941.
- GEORGE W. MORRISON, *Associate Director and Supervising Engineer Physical Plant (Baltimore)*  
B.S., University of Maryland, 1927; E.E., 1931.
- HOWARD ROVELSTAD, *Director of Libraries*  
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S. Columbia University, 1940.
- ADELE H. STAMP, *Dean of Women*  
B.A., Tulane University, 1921; M.A., University of Maryland, 1924.
- GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*  
B.S., University of Maryland, 1933.

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- JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*  
B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.
- HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*  
B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.
- WILBERT J. HUFF, *Chairman of the Division of Physical Sciences*  
B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale University, 1917; D.SC., (HON.), Ohio Northern University, 1927.
- CHARLES E. WHITE, *Chairman of the Lower Division*  
B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.
- ADOLF E. ZUCKER, *Chairman of the Division of Humanities*  
B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.

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Dr. Ronald Bamford (Graduate School), *Chairman*

### COMMITTEE ON SCHEDULING AND REGISTRATION

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### COMMITTEE ON LIBRARIES

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Dr. Joseph C. Biddix (Dentistry), *Chairman*

## THE COLLEGE

THE UNIVERSITY OF MARYLAND IS IN AN UNUSUALLY FAVORABLE LOCATION for students of business, government and politics, economics, public administration, geography, journalism and public relations, foreign service and international relations. Downtown Washington is only twenty-five minutes away in one direction, while the Baltimore business district is less than an hour in the other. There is frequent transportation service from College Park to each city. Assistance is given qualified students who wish to obtain a first-hand view of the far-flung economic activities of the national government or to utilize the libraries, government departments, and other facilities available in Washington.

The College of Business and Public Administration is a member of the American Association of Collegiate Schools of Business.

### Organization

The College comprises seven departments and two bureaus of research.

#### I. Department of Business Organization and Administration

1. Accounting and Statistics
2. Financial Administration
3. Industrial Administration
4. Insurance and Real Estate
5. Marketing Administration
  - (a) Advertising
  - (b) Foreign Trade
  - (c) Retail Store Management
  - (d) Sales Management
6. Personnel Administration
7. Transportation Administration
  - (a) Airline and Airport Management
  - (b) Traffic Management
8. Public Administration

#### II. Department of Economics

#### III. Department of Foreign Service and International Relations

#### IV. Department of Geography

#### V. Department of Government and Politics

#### VI. Department of Journalism and Public Relations

#### VII. Department of Office Management and Techniques

1. Management and Office Automation
2. Office Techniques

## *Objectives of the College*

VIII. Bureau of Business and Economic Research

IX. Bureau of Governmental Research

X. Maryland Municipal League (Affiliated)

## Objectives

The College of Business and Public Administration offers courses designed to prepare young men and women for service in business firms, governmental agencies, cooperative enterprises, labor unions, publishing firms, small business units, and other organizations requiring effective training in administrative skills and techniques, and for the teaching of business subjects, economics, geography, government and politics, and journalism and public relations in high schools and colleges. It supplies scientific training in administration to students and prospective executives on a professional basis comparable to university training in the other professional fields. Administration is regarded as a profession. The College of Business and Public Administration offers its students courses of instruction which present general principles and techniques of management and administration and brings together in systematic form the experiences and practices of business firms and governmental units. This plan of education does not displace practical experience, but supplements and strengthens it by shortening the period of apprenticeship otherwise necessary, and by giving a broad and practical knowledge of the major principles, policies, and methods of administration.

During the first half of the college study program the student secures a broad foundation upon which to base the professional and the more technical courses offered in the last half of the curriculum. The managerial and operating points of view are stressed in the advanced courses in production, marketing, labor, finance, real estate, insurance, accounting, office management and public administration. The purpose of the work offered is to aid the student as a prospective executive in developing his ability to identify and to solve administrative and managerial problems; and to adjust himself and his organization, policies and practices to changing social, political and economic situations.

The aim of the college is to present and illustrate such sound principles of management as are applicable to both big business and small business. Large-scale business, because of its possible economies, will be expanded in some industries under certain well-known conditions. There are, on the other hand, industries and many situations which still call for the small business. If these small-scale businesses are to be operated with profit to the owners and with satisfactory and economical service to the public, it is imperative that authentic principles of administration be applied to them. Sound principles of ethical conduct are emphasized at all times throughout the various courses.

The primary aim of collegiate education for government and business services is to prepare for effective management. The College of Business and Public



Administration, University of Maryland, was established to supply effective education in administration to the young men and women whose task will be the guiding of the more complex business enterprises and governmental units resulting from industrial, social and political development and expansion.

## General Information

Detailed information concerning fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September of each year to all undergraduate students, and again in February to all new undergraduate students not previously enrolled in the preceding fall semester.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

### COLLEGES LOCATED AT COLLEGE PARK:

Dean  
(College in which you are interested)  
The University of Maryland  
College Park, Maryland

### PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean  
(School in which you are interested)  
The University of Maryland  
Lombard and Greene Streets  
Baltimore 1, Maryland

## The Program in American Civilization

The University considers that it is important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American civilization. This program is also designed to provide the student with a general educational background.

Work in American civilization is offered at three distinct academic levels. The first level is required of all freshmen and sophomores at the University and is described below. The second level is for undergraduate students wishing

to carry a major in this field (see catalog for the College of Arts and Sciences). The third level is for students desiring to do graduate work in this field (see the Graduate School Announcements).

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

The 24 semester hours in American civilization are as follows:

1. English (12 hours, Eng. 1, 2 and 3, 4 or 5, 6), American history (6 hours, H. 5, 6), and American government (3 hours, G. & P. 1) are required subjects; however, students who qualify in one, two or all three of these areas by means of University administered tests are expected to substitute certain elective courses. Through such testing a student may be released from 3 hours of English (9 hours would remain an absolute requirement), 3 hours of American history (3 hours remaining as an absolute requirement), and 3 hours of American government. Students released from 3 hours of English will take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in history will take H. 56 instead of H. 5 and 6. Students who have been exempted from courses in English, history or American government may not take such courses for credit.

2. For the 3 additional hours of the 24 hours required, students elect one course from the following group (Elective Group I):

Econ. 37—Fundamentals of Economics. (Not open to freshmen. Students who may wish to take additional courses in economics should substitute Econ. 31 for Econ. 37).

Phil. 1—Philosophy of Modern Man

Soc. 1—Sociology of American Life

Psych. 1—Introduction to Psychology

(Students enrolled in the College of Business and Public Administration will normally meet this requirement by taking Econ. 31 in the sophomore year.)

3. Students who, on the basis of tests, have been released from 3, 6 or 9 hours in otherwise required courses in English, American history or American government (see 1 above), shall select the replacements for these courses from any or all of the following groups: (a) more advanced courses in the same department as the required courses in which the student is excused; or (b) elective Group I (see 2 above), provided that the same course may not be used as both a Group I and a Group II choice; or (c) Elective Group II. Group II consists of the following 3-hour courses:

H. 2, History of Modern Europe; either H. 51 or 52, The Humanities; either Mus. 20, Survey of Music Literature or Art 22, History of American Art; and Soc. 5, Anthropology.

## Academic Information

### DEGREES

The University confers the following degrees on students of Business and Public Administration: Bachelor of Science, Master of Business Administration, Master of Arts, and Doctor of Philosophy. The College has a number of graduate assistantships in Business Administration, Economics, Geography, Journalism and Public Relations, Government and Politics, the Bureau of Governmental Research and the Bureau of Business and Economic Research available for qualified graduate students. Applications for these assistantships should be made directly to the Dean of the College of Business and Public Administration. (See the Graduate School Announcements for graduate rules and regulations.)

Each candidate for a degree must file in the Office of the Registrar on a date announced for each semester a formal application for a degree. Candidates for degrees must attend a convocation at which degrees are conferred and diplomas are awarded. Degrees are conferred *in absentia* only in exceptional cases.

### GRADUATION REQUIREMENT

A minimum of 120 semester hours of credit with an average of "C" in courses suggested by the College in addition to the specified courses in air science, physical activities and hygiene are required for graduation. A minimum of 57 semester hours of the required 120 hours must be in upper division courses. The student is required to have an average of "C" for courses used in meeting the quantitative graduation requirements. The time required to complete the requirements for the bachelor's degree for the average student is eight semesters. A superior student, by carrying more than the average load, can complete the work in a shorter period of time.

### JUNIOR STANDING

To earn junior standing a student must complete fifty-six (56) semester hours of academic credit with an average grade of "C" (2.0) or better. In computing this average, the following provisions apply: all academic courses carrying one or more credits which have been taken up to the time of computation shall be included; courses carrying "O" credit shall not be included; courses with grade "F" shall be included; courses in Basic Air Science, the physical education required of all University students, and the health courses required of all women students shall not be included.

Detailed regulations pertaining to junior standing are presented in full in the publication, *University General and Academic Regulations*.

#### SENIOR RESIDENCE REQUIREMENT

After a student has earned acceptable credit to the extent of 90 semester hours exclusive of the required work in military science, physical activities, and hygiene, either at the University of Maryland or elsewhere, he must earn a subsequent total of at least 30 semester hours with an average grade of "C" or better at the University of Maryland. No part of these credits may be transferred from another institution. Specific requirements for graduation in the selected curriculum must be met.

#### PROGRAMS OF STUDY

The College offers programs of study in economics, business administration, office techniques, office management, public administration, government and politics, geography, journalism and public relations, and some combination curriculums, e.g., business administration and law, commercial teaching and industrial education. Research is emphasized throughout the various programs.

#### PROFESSIONAL OBJECTIVES

The executive manager or administrator in modern business enterprises and governmental units and agencies should have a clear understanding of:

(a) the business organizations and institutions which comprise the modern business world;

(b) the political, social, and economic forces which tend to limit or to promote the free exercise of his activities; and

(c) the basic principles which underlie the efficient organization and administration of a business or governmental enterprise.

In addition, the executive or the prospective executive should:

(a) be able to express his thoughts and ideas in correct and concise oral and written English;

(b) have some useful knowledge of the physical world in which he operates;

(c) have a knowledge of the development of modern civilization through a study of history, government, economics, and other social studies;

(d) have a sympathetic understanding of people gained through a study of sociology, geography, politics, labor relations, marketing, and other subjects.

If the executive is to be successful in solving current and future business and governmental problems, he should be skilled in the scientific method of collecting, analyzing, and classifying pertinent facts in the most significant manner, and then, on the basis of these facts, be able to draw sound conclusions and to formulate general principles which may be used to guide his present and



future professional or vocational conduct. In other words, probably the most important qualities in a successful executive are:

(a) the ability to arrive at sound judgments;

(b) the capacity to formulate effective plans and policies, and the imagination and ability to devise organizations, methods, and procedures for executing them.

#### FACILITIES FURNISHED

The teaching staff and the curriculums of the College of Business and Public Administration have been selected and organized for the purpose of providing a type of professional and technical education that will aid the capable and ambitious student in developing his potential talents to their full capacity.

The college study programs on both the undergraduate and graduate levels presuppose effective training in English, history, government, science, and mathematics.\* The program of study for any individual student may be so arranged as to meet the needs of those preparing for specific lines of work, such as accounting, advertising, banking, foreign trade, industrial administration, marketing administration, personnel administration, office management, real estate practice, insurance, journalism, public relations, government employment, office techniques, teaching, and research.

#### AIR SCIENCE INSTRUCTION

All male students unless specifically exempted under University rules are required to take Basic Air Science for a period of two years. The successful completion of this course is a prerequisite for graduation but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of air science will be required to complete the course or take it until graduation whichever occurs first.

Selected students who meet the requirements of the Department of Air Science may carry Advanced Air Science courses during their junior and senior years and may receive, under conditions determined by the U.S.A.F., a regular or reserve commission in the United States Air Force.

#### COSTS

Actual annual costs of attending the University include \$185.00 fixed charges; \$101.00 special fees; \$400.00 board; \$170.00 to \$200.00 lodging for Maryland residents, or \$220.00 to \$250.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new students. A charge

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\*The major portion of this training is usually secured in the four years of high school and the first two years of college.



## Honors, Awards and Scholarships

of \$300.00 is assessed to all students who are non-residents of the State of Maryland.

A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee.

For a more detailed statement of costs, write to the Editor of Publications for a copy of the publication, *An Adventure in Learning*.

### ADMISSION

All students desiring to enroll in the College of Business and Public Administration must apply to the Director of Admissions of the University of Maryland at College Park.

In selecting students more emphasis will be placed upon good marks and other indications of probable success in college than upon a fixed pattern of subject matter. In general, four units of English and one unit each of social studies and natural sciences are required. At least one unit of algebra is required and one unit of plane geometry is desirable. While foreign language is desirable for certain programs no foreign language is required for entrance. Fine arts, trade and vocational subjects are acceptable as electives.

For a more detailed statement of admissions, write to the Editor of Publications for a copy of the publication, *An Adventure in Learning*.

## Honors, Awards and Scholarships

### THE DEAN'S LIST OF DISTINGUISHED STUDENTS

Any student who has passed at least 14 hours of work in the preceding semester, without failure of any course, and with an average grade on all courses of at least 3.5, will be placed on the Dean's List of Distinguished Students. This list is posted in the office of the Dean of the College.

### BETA GAMMA SIGMA

The Alpha of Maryland Chapter of Beta Gamma Sigma was chartered in 1940. The purpose of this honorary society is to encourage and reward scholarship and accomplishment among students of commerce and business administration; to promote the advancement of education in the art and science of business; and to foster integrity in the conduct of business operations. Chapters of Beta Gamma Sigma are chartered only in schools holding membership in the American Association of Collegiate Schools of Business. Third and fourth year students in business administration are eligible; if in his third year, a student must rank in the highest four per cent of his class, and if in his fourth year, he must rank in the highest ten per cent in order to be considered for selection.

### THE DELTA SIGMA PI SCHOLARSHIP KEY

This is awarded annually to the student who has maintained the highest scholastic standing during the entire course of study in business administration or

economics. Delta Sigma Pi was founded at New York University on November 7, 1907. The Gamma Sigma of Maryland chapter was chartered at the University of Maryland in 1950. Delta Sigma Pi is a professional fraternity organized to foster the study of business in universities; to encourage scholarship, social activity, and the association of students for their mutual advancement by research and practice; to promote closer affiliation between the commercial world and students of commerce; and to further a high standard of commercial ethics and culture, as well as the civic and commercial welfare of the community. Members are selected from the College of Business and Public Administration on the basis of leadership, scholastic standing, and promise of future business success.

#### PI SIGMA ALPHA FRED HAYS MEMORIAL AWARD

The Pi Sigma Alpha Fred Hays Memorial Award in Government and Politics is awarded annually by the Department of Government and Politics to the graduating senior who earns the highest grades among the majors in Government and Politics of the graduating class. The award is a cash award, not less than \$25.00, provided by an anonymous alumnus. This award is named in memory of Fred Hays, an honor graduate and former student president of Pi Sigma Alpha, the honorary political science fraternity. Fred Hays was killed in action in Korea.

#### SCHOLARSHIPS

The Alumni Association of the University provides a scholarship of \$250.

Baltimore Sunpapers Scholarship in Journalism. The Board of Trustees of A. S. Abell Foundation, Inc. has contributed \$500 to provide a scholarship in journalism to be awarded to a worthy senior in the College of Business and Public Administration who is majoring in editorial journalism.

The Baltimore News-Post finances two \$375 annual journalism scholarships.

The Montgomery County Press Association's \$200 annual journalism scholarship is awarded to a resident of that county.

The Maryland Motor Truck Association, Inc., provides an award of \$500 annually to a student in his senior year concentrating in transportation who is registered in the College of Business and Public Administration.

Pilot Freight Carriers, Inc., Winston-Salem, North Carolina, provides a \$500 award to a senior in the College of Business and Public Administration who is concentrating in transportation with a major interest in motor transportation.

The Maryland Association of Certified Public Accountants makes available a scholarship of \$200 for an outstanding senior student in accounting who is registered in the College.

### *Honors, Awards and Scholarships*

The Arthur Young and Co. Foundation, Inc., makes available a scholarship of \$750 for an exceptional senior student concentrating in accounting who is registered in the College of Business and Public Administration.

## CURRICULA AND REQUIRED COURSES

A student in the College can so arrange his grouping and sequence of courses as to form a fair degree of concentration in one of the departments. When, however, he wishes to become a *specialist* in any one of the departments, he should plan to continue his subjects on to the graduate level, working toward either the Master's or the Doctor of Philosophy degree.

### I. BUSINESS ORGANIZATION AND ADMINISTRATION

Business organizations are set up primarily for the purpose of *producing* and *distributing* goods and services. Modern business administration requires a knowledge of and skill in the use of effective tools for the control of organizations, institutions, and operations. The curriculums of the Department of Business Organization and Administration emphasize the principles and problems of the development and the use of policies and organizations, and the methods, techniques and procedures of execution, in other words, the essence of administration and management.

#### STUDY PROGRAMS IN THE DEPARTMENT

The programs of study in the Department of Business Organization and Administration are so arranged as to facilitate concentrations according to the major functions of business organization. This plan is not, however, based on the assumption that these major divisions are independent units, but rather that each is closely related and dependent on the others. Every student in Business Administration, therefore, is required to complete satisfactorily a minimum number of required basic subjects in economics and in each of the major functional fields. Each graduate upon completion of the requirements for the bachelor's degree finds himself well grounded in the theory and practice of administration. There are five commonly recognized major business functions, viz: production, marketing, finance, labor relations, and control.

The function of control may be thought of as comprising two sectors, viz. internal and external. Internal control has to do with men, materials, and operations. External control is secured through the force of laws, and court, board and commission decisions, also through the influence of custom and public opinion. Management endeavors to make adequate adjustments to these forces. Courses in law and public administration, for example, aid in giving the students an understanding of the problems, devices, and methods of external or "social" control.

#### FRESHMAN AND SOPHOMORE REQUIREMENTS

During the first half of the program of study each student in the Department of Business Organization and Administration is expected to complete

## *Business Organization and Administration Curriculum*

the following basic subjects (or the equivalent) except as indicated in a particular curriculum:

<i>Required Courses:</i>	<i>Semester Hours</i>
Eng. 1, 2—Composition and Readings in American Literature <sup>1</sup> ...	6
Eng. 3, 4 or 5, 6—Composition and World or English Literature	6
Math. 5, 6—Mathematics .....	6
Geog. 1, 2—Economic Resources .....	4
Econ. 4, 5—Economic Developments .....	4
B.A. 10, 11—Organization and Control .....	4
G. & P. 1—American Government <sup>1</sup> .....	3
Elective Group I .....	3
H. 5, 6—History of American Civilization <sup>1</sup> .....	6
B.A. 20, 21—Principles of Accounting .....	8
Speech 18, 19—Introductory Speech .....	2
Econ. 31, 32—Principles of Economics .....	6
Air Science and Physical Activities for Men.....	12
Health and Physical Activities for Women .....	8
Total specified requirements.....	66 or 70

A minimum of forty per cent of the total number of credits required for graduation must be in subjects with designations other than Business Administration; forty per cent of the required 120 semester hours of academic work must be in Business Administration subjects, the other twenty per cent may be in either group or comprise a combination of the two groups of subjects. An average of "C" in Business Administration courses is required for graduation.

Freshmen who expect to make a concentration in foreign trade, or who plan to enter public service abroad, should elect an appropriate foreign language. If a foreign language is elected, 12 semester hours or the equivalent must be completed with an acceptable grade.

### JUNIOR AND SENIOR REQUIREMENTS

During the junior and senior years each student in the Department is required to complete in a satisfactory manner the following specified courses unless the particular curriculum being followed provides otherwise:

Econ. 140—Money and Banking.....	3
B. A. 100—Financial Management .....	3
B. A. 150a—Marketing Principles and Organization.....	3
B. A. 150—Marketing Management .....	3
Econ. 160—Labor Economics .....	3
B. A. 130—Elements of Statistics.....	3
B. A. 160—Personnel Management .....	3
B. A. 169—Industrial Management .....	3
B. A. 180, 181—Business Law I, II.....	8
Total.....	32

<sup>1</sup> See American Civilization Program, page 3.



The remaining credits for juniors and seniors may be used to meet the requirements for one of the special concentration programs, for example, in public administration, foreign service, commercial teaching, and in the fields of business administration, such as: accounting and statistics, production administration, marketing, advertising, retailing, purchasing, foreign trade, transportation, labor relations, real estate, insurance, investment and general finance. Juniors and seniors may elect appropriate secretarial training courses.

#### COMBINED ADMINISTRATION AND LAW PROGRAM

When a student elects the combination Administration-Law curriculum, he must complete in a satisfactory manner the specific requirements listed for the first three years of the general curriculum in administration plus enough electives to equal a minimum of 92 credits exclusive of air science, physical activities and hygiene, with an average grade of at least "C." The last year of college work before entering the Law School of the University of Maryland must be done in residence at College Park. The Bachelor of Science degree from the College of Business and Public Administration is conferred upon the completion of the first year in the Law School with an average grade of "C" or better. Eligible candidates are recommended for the degree of Bachelor of Science by the College of Business and Public Administration upon the concurrent recommendation of the School of Law, University of Maryland. Business Law cannot be used as credit in this combined curriculum.

#### MASTER OF BUSINESS ADMINISTRATION

Candidates for the degree of Master of Business Administration are accepted in accordance with the procedures and requirements for the graduate School. (See the Graduate School Announcements, Section II.)

#### THE GENERAL CURRICULUM IN ADMINISTRATION

This curriculum is set up on an eight semester basis which corresponds to the traditional four-year course that leads to a bachelor's degree. A student may complete the full course in a shorter period of time by attending summer sessions. A superior student may, however, complete the course in a shorter period of time by carrying a heavier load each semester.

<i>Freshman Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Geog. 1, 2—Economic Resources .....	2	2
Econ. 4, 5—Economic Developments .....	2	2
Eng. 1, 2—Composition and Readings in American Literature <sup>1</sup> .....	3	3
B. A. 10, 11—Organization and Control .....	2	2
Math. 5 and 6.....	3	3
G. & P. 1—American Government <sup>1</sup> .....	3	..
A. S. 1, 2—Basic Air Science (men) .....	2	2
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women).....	..	2
Physical Activities (men and women).....	1	1
Elective Group I.....	..	3
<b>Total .....</b>	<b>18</b>	<b>18</b>

<sup>1</sup> See American Civilization Program, page 3.

# Business Organization and Administration Curriculum

	Semester	
	I	II
<b>Sophomore Year</b>		
Eng. 3, 4, or 5, 6—Composition and World or English Literature	3	3
Econ. 31, 32—Principles of Economics .....	3	3
B. A. 20, 21—Principles of Accounting .....	4	4
Sp. 18, 19—Introductory Speech.....	1	1
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
Electives (women) .....	3	3
A. S. 3, 4—Basic Air Science (men).....	2	2
Physical Activities (men and women).....	1	1
Total .....	17	17
<b>Junior Year</b>		
Econ. 140—Money and Banking .....	3	..
B. A. 140—Financial Management .....	..	3
B. A. 130—Elements of Business Statistics .....	3	..
B. A. 150a—Marketing Principles and Organization .....	3	..
B. A. 150—Marketing Management .....	..	3
Econ. 160—Labor Economics .....	3	..
B. A. 160—Personnel Management .....	..	3
Electives in Business and Public Administration, Economics, or other approved subjects .....	3	6
Total .....	15	15
<b>Senior Year</b>		
B. A. 180, 181—Business Law, I, II .....	4	4
Econ. 131—Comparative Economic Systems .....	3	..
Econ. 171—Economics of American Industries or B. A. 184—Public Utilities .....	..	3
Econ. 142—Public Finance and Taxation .....	3	..
B. A. 169—Industrial Management .....	3	..
B. A. 189—Government and Business .....	..	3
Electives in Business & Public Administration, Economics or other approved subjects .....	3	6
Total .....	16	16

Electives may be chosen under the direction of a faculty adviser from courses in accounting, statistics, geography, public utilities and public administration, secretarial training, or other courses that will aid the student in preparing for his major objective. The electives indicated in the General Course are provided so that students can arrange their schedules, under the guidance of a faculty adviser, in such a way as to secure a concentration or major when desired in:

- |                              |                                  |
|------------------------------|----------------------------------|
| 1. Accounting and Statistics | 5. Marketing Administration      |
| 2. Financial Administration  | 6. Personnel Administration      |
| 3. Industrial Administration | 7. Transportation Administration |
| 4. Insurance and Real Estate | 8. Public Administration         |

<sup>1</sup> See American Civilization Program, page 3.

## 1. ACCOUNTING AND STATISTICAL CONTROL

Internal control in modern business and governmental organizations is a major over-all administrative function. The rapid growth in size and complexity of current governmental units and business enterprises has emphasized the importance of the problems of control in management. In order to control intelligently and effectively the manifold activities of these units, it is necessary to establish an organization, formulate policies, and develop methods of procedures. In order to perform satisfactorily these managerial activities, it is necessary to have pertinent facts concerning the operations of the various units, divisions, and departments. It is the function of the accounting and statistical departments to secure, analyze, classify, and interpret these facts.

This study program is designed to give the student a broad training in administrative control supplemented by specific technical training in the problems, procedures, methods and techniques of accounting and statistics. If the program is followed diligently, the student may prepare himself for a career as a public accountant, tax specialist, cost accountant, auditor, budget officer, comptroller, credit manager, or treasurer.

In order to provide for practical experience arrangements have been made with firms of certified public accountants in Baltimore, New York and the District of Columbia for apprenticeship training in the field of public accounting. This training is provided between semesters of the senior year (approximately January 15 to February 15), and for the semester immediately following graduation. A student may also elect to take one semester of apprenticeship training before graduation.

Students who select a concentration in accounting and statistics follow the general study program in the freshman and sophomore years.

The following study program provides courses for those wishing to concentrate in this important field:

<i>Junior Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
B. A. 110, 111—Intermediate Accounting .....	3	3
B. A. 121—Cost Accounting .....	..	4
B. A. 123—Income Tax Accounting ..	4	..
B. A. 130—Elements of Business Statistics .....	..	3
Econ. 140—Money and Banking .....	3	..
B. A. 140—Financial Management .....	..	3
B. A. 150a—Marketing Principles and Organization .....	3	..
B. A. 150—Marketing Management .....	..	3
Elective .....	3	..
Total .....	16	16

Senior Year	Semester	
	I	II
Econ. 160—Labor Economics .....	3	..
B. A. 160—Personnel Management .....	..	3
B. A. 124—Advanced Accounting Theory and Practice or B. A. 118—Governmental Accounting .....	3	..
B. A. 126—Advanced Accounting Theory and Practice....	..	3
B. A. 122—Auditing Theory and Practice .....	3	..
B. A. 127—Advanced Auditing Theory and Practice .....	..	3
B. A. 169—Industrial Management .....	3	..
B. A. 180, 181—Business Law .....	4	4
Electives .....	..	3
Total .....	16	16

The student interested in the field may select such electives, with the aid of his adviser, from the following list of subjects, such courses as will best meet his needs:

- |   |  |
|---|--|
| B. A. 100—Office Operations and Management (3)            | B. A. 184—Public Utilities (3)   |
| B. A. 116—Public Budgeting (3)                            | B. A. 210—Advanced Accounting Theory (2-3)   |
| B. A. 118—Governmental Accounting (3)                     | B. A. 220—Managerial Accounting (3)  |
| B. A. 125—C.P.A. Problems (3)*                            | B. A. 221, 222—Seminar in Accounting (arranged) (3)  |
| B. A. 129—Apprenticeship in Accounting (0)                | B. A. 226—Accounting Systems (3)   |
| B. A. 132—Sample Surveys in Business and Economics (3)    | B. A. 228—Research in Accounting (arranged) (3)  |
| B. A. 133—Statistical Research and Control Techniques (3) | B. A. 229—Studies of special problems in the fields of Control and Organization (arranged) (3) |
| B. A. 134—Statistical Quality Control (3)                 | Econ. 131 — Comparative Economic Systems (3)   |
| B. A. 135—Time Series Analysis and Forecasting (3)        | Econ. 132—Advanced Economic Principles (3)   |
| B. A. 141—Investment Management (3)                       | Econ. 134—Contemporary Economic Thought (3)  |
| B. A. 143—Credit Management (3)                           | Econ. 142—Public Finance and Taxation (3)  |
| B. A. 148—Advanced Financial Management (3)               |  |
| B. A. 149—Analysis of Financial Statements (3)            |  |
| B. A. 166—Business Communications (3)                     |  |

## 2. FINANCIAL ADMINISTRATION

A nation with a highly developed industrial system requires an effective financial organization. Production and marketing activities of business enterprises must be financed; a large volume of consumer purchases depend on credit, and the activities of local, state, and federal government depend, in large part, on taxation and borrowing. To meet these needs a complicated structure of financial institutions,

\*C.P.A. Problems is recommended for students who plan to go into public accounting. Such students should plan their study program so as to meet the professional examination requirements of the state in which they expect to take the examination or to practice.

both private and public, has evolved together with a wide variety of financial instruments. The methods used are equally varied and complicated. Since the financing service is so pervasive throughout our economic life and because it is an expense which must be borne by the ultimate purchaser, the management of the finance function is endowed with a high degree of public interest.

This study program is designed to give the student fundamental information concerning financing methods, institutions, and instruments; and to aid him in developing his ability to secure and evaluate pertinent facts, and to form sound judgments with reference to financial matters. Through a wise selection of subjects the student who selects this curriculum may prepare himself for positions in the commercial, savings, and investment banking fields, investment management; corporate financial management; real estate financing; and insurance. A student may qualify himself to enter government service, e. g., in departments regulating banking operations, international finance, the issuance and sales of securities, and a number of financial corporations owned and operated or controlled by the government.

Students wishing to form a concentration in financial administration should follow the general study program for the freshman and sophomore years; the program for the junior and senior years is outlined as follows:

	Semester	
	I	II
<i>Junior Year</i>		
Econ. 140—Money and Banking.....	3	..
B. A. 140—Financial Management .....	..	3
B. A. 130—Elements of Business Statistics.....	..	3
B. A. 110-111—Intermediate Accounting .....	3	3
B. A. 166—Business Communications .....	3	..
B. A. 150a—Marketing Principles and Organization.....	3	..
B. A. 150—Marketing Management .....	..	3
Electives in Economics, Government and Politics, and Business and Public Administration.....	3	4
Total.....	15	16
<i>Senior Year</i>		
B. A. 180, 181—Business Law.....	4	4
B. A. 169—Industrial Management .....	..	3
B. A. 141—Investment Management .....	3	..
B. A. 143—Credit Management .....	3	..
B. A. 160—Personnel Management .....	..	3
Econ. 160—Labor Economics .....	3	..
B. A. 148—Advanced Financial Management.....	..	3
Electives .....	3	3
Total.....	16	16



## *Industrial Administration Curriculum*

Selection of electives may be made with the aid of the adviser from the following list of subjects:

- |  |   |
|--|---|
| B. A. 100—Office Operations and Management (3) | B. A. 249—Studies of Special Problems in the Field of Financial Administration (arranged) |
| B. A. 123—Income Tax Accounting (4)            | Econ. 141—Theory of Money, Credit and Prices (3)  |
| Econ. 147—Business Cycles (3)                  | Econ. 142—Public Finance and Taxation (3)   |
| B. A. 149—Analysis of Financial Statements (3) | Econ. 149—International Finance and Exchange (3)  |
| B. A. 184—Public Utilities (3)                 | Econ. 240—Seminar in Monetary Theory and Policy   |
| B. A. 190—Life Insurance (3)                   |   |
| B. A. 191—Property Insurance (3)               |   |
| B. A. 196—Real Estate Finance (3)              |   |
| B. A. 240—Seminar in Financial Management (3)  |   |

### 3. INDUSTRIAL ADMINISTRATION

This curriculum is designed to acquaint the student with the problems of organization and control in the field of industrial management. Theory and practice with reference to organization, policies, methods, processes, and techniques are surveyed, analyzed, and criticized. The student becomes familiar with the factors that determine plant location and layout, types of buildings, and the major kinds of machines and processes utilized, as well as effective methods and devices for the selection and utilization of men, materials and machines.

The courses, in addition to those required of all students in the College, which will aid the undergraduate student in preparing himself for a useful place in this field of effort are:

- |   |   |
|---|---|
| B. A. 100—Office Operations and Management (3)            | *B. A. 169—Industrial Management (3)                          |
| *B. A. 121—Cost Accounting (4)                            | B. A. 170—Transportation Services and Regulation (3)          |
| B. A. 122, 127—Auditing (3, 3)                            | B. A. 171—Industrial and Commercial Traffic Management (3)    |
| B. A. 132—Sample Surveys in Business and Economics (3)    | B. A. 172—Motor Transportation (3)                            |
| B. A. 133—Statistical Research and Control Techniques (3) | *B. A. 177—Motion Economy and Time Study (3)                  |
| B. A. 153—Purchasing Management (3)                       | *B. A. 178—Production Planning and Control (2)                |
| *B. A. 163—Industrial Relations (3)                       | B. A. 265—Development and Trends in Industrial Management (3) |
| B. A. 166—Business Communications (3)                     |   |
| *B. A. 167—Job Evaluation and Merit Rating (2)            |   |

### 4. INSURANCE AND REAL ESTATE

Today both insurance and real estate are fields which prefer university trained persons. In insurance, opportunities are available in the home offices

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\*These courses are specific requirements for students concentrating in industrial administration.

and in the field to persons who will ultimately specialize in life, property, or casualty insurance. In real estate, a group of specialists—real estate brokers, appraisers, property managers, and persons handling the financing of real estate—are now recognized. A proper arrangement of courses by a student will provide academic preparation toward the examinations for Chartered Life Underwriter (C.L.U.), Chartered Property Casualty Underwriter (C.P.C.U.), and new professional requirements in real estate. Also, from a purely personal or family viewpoint these courses can be of immense value.

Students who select a concentration in insurance and real estate should follow the general study program for the freshman and sophomore years. The program for the junior and senior years is outlined below.

	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
<i>Junior Year</i>		
Econ. 140—Money and Banking .....	3	..
B. A. 140—Financial Management .....		3
B. A. 130—Elements of Business Statistics .....	3	..
B. A. 150a—Marketing Principles and Organization .....	3	..
B. A. 150—Marketing Management .....	..	3
B. A. 190—Life Insurance .....	3	..
B. A. 191—Property Insurance .....	..	3
B. A. 195—Real Estate Principles .....	3	..
B. A. 196—Real Estate Finance .....	..	3
Elective .....	..	3
Total .....	15	15
<i>Senior Year</i>		
B. A. 180, 181—Business Law .....	4	4
B. A. 169—Industrial Management .....	..	3
Econ. 160—Labor Economics .....	3	..
B. A. 160—Personnel Management .....	..	3
B. A. 141—Investment Management .....	3	..
B. A. 194—Insurance Agency Management .....	3	..
B. A. 197—Real Estate Management .....	..	3
Electives .....	3	3
Total .....	16	16

Selection of electives may be made with the aid of the adviser from the following and other subjects:

Soc. 114—The City (3)	Econ. 147—Business Cycles (3)
Soc. 173—Social Security (3)	B. A. 148—Advanced Financial Management (3)
Econ. 141—Theory of Money, Credit and Prices (3)	B. A. 151—Advertising (3)
Econ. 142—Public Finance and Taxation (3)	B. A. 166—Business Communications (3)
B. A. 100—Office Operations and Management (3)	B. A. 189—Business and Government (3)
B. A. 123—Income Tax Accounting (4)	B. A. 290—Seminar in Insurance (3)
	B. A. 295—Seminar in Real Estate (3)

## 5. MARKETING ADMINISTRATION

Modern business administration is concerned largely with marketing activities. Buying and selling of products and services comprise the major portion of the time and energies of a large group of our population. The ideals of our system of private property, individual initiative and free enterprise are closely related to present-day marketing organization and practice. Effective solutions of the problems of marketing are necessary to the success of the individual business enterprise and for the welfare of the consumer. If the costs of distribution are to be reduced or kept from rising unduly, it is necessary that careful study be made of the organization, policies, methods, and practices of advertising, selling, purchasing, merchandising, transportation, financing, storing, and other related marketing activities, and appropriate action taken by qualified technicians and executives.

The purpose of the marketing administration program is to give the student an opportunity to analyze, evaluate and otherwise study the problems connected with marketing institutions, organizations, policies, methods, and practices. The student who elects this field of concentration may develop his aptitudes, on the technical level, for research, selling, buying, and preparing advertising copy, and on the administrative level develop his abilities for organizing, planning, and directing the various activities in the field of marketing.

Thoughtful selection of courses from the following lists, in addition to those required of all students in business administration, will aid the student in preparing himself for an effective position in the field of marketing. He may form a concentration in:

- |   |  |
|---|--|
| a. General Marketing                                      | d. Retail Store Management                                 |
| b. Advertising  | c. Sales Management  |
| c. Foreign Trade  |  |
| B. A. 100—Office Operations and Management (3)            | B. A. 166—Business Communications (3)                      |
| B. A. 132—Sample Surveys in Business and Economics (3)    | B. A. 170—Transportation Services and Regulation (3)       |
| B. A. 133—Statistical Research and Control Techniques (3) | B. A. 171—Industrial and Commercial Traffic Management (3) |
| *B. A. 143—Credit Management (3)                          | B. A. 172—Motor Transportation (3)                         |
| Econ. 147—Business Cycles (3)                             | B. A. 190—Life Insurance (3)                               |
| *B. A. 151—Advertising (3)                                | B. A. 191—Property Insurance (3)                           |
| B. A. 152—Advertising Copy and Layout (3)                 | B. A. 195—Real Estate Principles (3)                       |
| *B. A. 153—Purchasing Management (3)                      | B. A. 250—Problems in Sales Management (3)                 |
| *B. A. 154—Retail Store Management (3)                    | B. A. 251—Problems in Advertising (3)                      |
| B. A. 155—Problems in Retail Merchandising (3)            | B. A. 252—Problems in Retail Store Management (3)          |
| B. A. 156—Marketing Research Methods (3)                  | B. A. 257—Seminar in Marketing Management (arranged) (3)   |
| B. A. 158—Advertising Problems (3)                        | B. A. 258—Research Problems in Marketing (arranged) (3)    |
| B. A. 159—Newspaper Advertising (3)                       |  |

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\*These courses are specific requirements for students taking a concentration in marketing management.

For those especially interested in foreign trade, selections may be made from the following courses:

- \*Econ. 136—International Economic Policies and Relations (3)
- Econ. 137—Economics of National Planning (3)
- \*Econ. 149—International Finance and Exchange (3)
- B. A. 151—Advertising Programs and Campaigns (3)
- \*B. A. 157—Foreign Trade Procedure (3)
- \*B. A. 170—Transportation Services and Regulation (3)
- \*B. A. 173—Water Transportation (3)
- B. A. 189—Government and Business (3)
- Ec. Geog. 4—Regional Geography of the Continents (3)
- Geog. 100, 101—Regional Geography of the United States and Canada (3, 3)
- Geog. 102—The Geography of Manufacturing in the United States and Canada (3)
- Geog. 110, 111—Latin America (3, 3)
- Geog. 115—Peoples of Latin America (2)
- Geog. 120—Economic Geography of Europe (3)
- Geog. 122—Economic Resources and Development of Africa (3)
- Geog. 130-131—Economic and Political Geog. of Southern and Eastern Asia (3, 3)
- Geog. 180, 181—Principles of Geography (3, 3)
- Geog. 260-261—Problems in the Geog. of Europe and Africa (3, 3)

## 6. PERSONNEL ADMINISTRATION AND LABOR ECONOMICS

Recent developments of large scale operation on the part of both private enterprise and government has emphasized the growing importance of personnel relationships. Successful operation depends on harmonious cooperation between employer and employee. The interests of the public, the owners, and the management, as well as those of the employees may be greatly affected by the solutions evolved in any given case of personnel relationship. The growth of large-scale, centrally controlled labor organizations and the increased participation of governmental agencies in labor disputes have created problems for which business management, union officials, and government representatives have been, on the whole, ill-prepared to solve satisfactorily. The government, the unions, and business need men and women qualified to deal effectively with these problems. They should have broad training and technical information in the fields of business and public administration, economics, and psychology, together with suitable personalities. They must be able to approach these problems with an open mind, unbiased by personal and class prejudices.

Personnel administration which has to do with the direction of human effort, is concerned with securing, maintaining, and utilizing, an effective working force. People adequately trained in personnel administration find employment in business enterprises, governmental departments, governmental corporations, educational institutions and charitable organizations.

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\*These courses are specific requirements for students taking a concentration in foreign trade.



## *Transportation Administration Curriculum*

A student may select from the following courses those which will, in addition to those required of all students in business administration, best prepare him for the kind of personnel work he wishes to enter.

- |  |   |
|--|---|
| *B. A. 163—Industrial Relations (3)                                    | B. A. 262—Seminar in Contemporary Trends in Labor Relations (3)                         |
| *B. A. 164—Recent Labor Legislation and Court Decisions (3)            | B. A. 265—Development and Trends in Industrial Management (3)                           |
| *B. A. 167—Job Evaluation and Merit Rating (2)                         | B. A. 266—Research in Personnel Management (arranged) (3)                               |
| *B. A. 169—Industrial Management (3)                                   | B. A. 267—Research in Industrial Relations (arranged) (3)                               |
| G. & P. 111—Public Personnel Administration (3)                        | B. A. 269—Studies of Special Problems in Employer-Employee Relationships (arranged) (3) |
| Psych. 2—Applied Psychology (3)  | B. A. 271—Theory of Organization (3)  |
| Psych. 21—Social Psychology (3)  |   |
| Psych. 161—Industrial Psychology (3)                                   |   |
| G. & P. 214—Problems in Public Personnel Administration (arranged) (3) |   |

### 7. TRANSPORTATION ADMINISTRATION

The problems of transportation administration are complex and far reaching. The student preparing for this type of work should be well grounded in economics, government, and business administration, as well as being proficient in the use of the technical tools of the profession. Rail, highway, water, and air transportation are basic to our economic life, in fact, to our very existence. This curriculum gives considerable emphasis to air transportation.

The following courses, in addition to those required of all students in the college will aid the student in preparing himself for a useful place in the fields of air, water, highway, and railway transportation. This curriculum besides preparing for positions with carriers also fits the student for industrial traffic management, trade association and government work in transportation. (To major in transportation administration the student must complete 15 hours of the courses listed below including B.A. 171):

- |  |   |
|--|---|
| B. A. 157—Foreign Trade Procedure (3)                      | B. A. 175—Airline Administration (3)          |
| B. A. 170—Transportation Services and Regulation (3)       | B. A. 176—Problems in Airport Management (3)  |
| B. A. 171—Industrial and Commercial Traffic Management (3) | B. A. 184—Public Utilities (3)                |
| B. A. 172—Motor Transportation (3)                         | B. A. 270—Seminar in Air Transportation (3)   |
| B. A. 172a—Motor Carrier Administration (3)                | B. A. 275—Seminar in Motor Transportation (3) |
| B. A. 173—Water Transportation (3)                         | B. A. 277—Seminar in Transportation (3)       |
| B. A. 174—Commercial Air Transportation (3)                | B. A. 284—Seminar in Public Utilities (3)     |

Other courses may be selected with the approval of the adviser for the curriculum.

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\*These courses are specific requirements for those students taking a concentration in personnel administration and labor economics.



## 8. PUBLIC ADMINISTRATION

The trend toward increased governmental participation in the fields of our economic, political and social life has been developing for a number of years so that now the government is the largest business enterprise in the country. In addition to the Federal Government, state and local government agencies have called upon the universities to aid in training young men or women for effective public service. Students desiring a specialized training in the broad field of government service should take the regularly established curriculum in Government and Politics appearing in pages 30-31 of this catalog and select electives from the following:

- G. & P. 111—Public Personnel Administration (3)
- G. & P. 112—Public Financial Administration (3)
- G. & P. 181—Administrative Law (3)
- B. A. 10, 11—Organization and Control (2, 2)
- B. A. 20, 21—Principles of Accounting (4, 4)
- B. A. 130—Elements of Business Statistics (3)
- B. A. 150a—Marketing Principles and Organization (3)
- B. A. 189—Business and Government (3)
- Econ. 140—Money and Banking (3)

Other courses may be selected with the approval of the adviser for the program. Students pursuing this curriculum should arrange their programs under the supervision of the Department of Government and Politics.

## II. ECONOMICS

The program of studies in the field of economics is designed to meet the needs of students who wish to concentrate either on a major or minor scale in this division of the social sciences. Students who expect to enroll in the professional schools and those who are planning to enter the fields of business or public administration, or foreign service, or social service administration, will find courses in economics of considerable value to them in their later work. A student of economics should choose his courses to meet the requirements for his major objective, or the Master of Arts, or a Doctor of Philosophy degree. (He should consult the Graduate School Announcements for the general requirements for the advanced degrees.)

### REQUIREMENTS FOR AN ECONOMICS MAJOR

In addition to the University requirements in social studies, English, air science, hygiene, and physical activities, the student majoring in economics is required to complete a minimum of 36 semester hours in economics with an average grade of not less than "C". Required courses are Econ. 4, 5, 31, 32, 102 and 132. B.A. 130 (Statistics) is also required and B.A. 20 and 21 (Accounting) are recommended. Other courses in economics to meet the requirements of the major are to be selected with the aid of a faculty adviser. Business

Administration courses which may count as economics credit are B.A. 130, 132, 133, 164, 184, 189.

Economics majors enrolled in the College of Arts and Sciences must, of course, fulfill all the specific requirements of that College, including 12 semester hours of foreign language and 12 semester hours of natural science and mathematics.

Economics majors enrolled in the College of Business and Public Administration may elect to take a foreign language or, in lieu of foreign language, may take B.A. 10 and 11 and Geog. 1 and 2. All B.P.A. students must take 6 semester hours of mathematics, but may substitute B.A. 20 and 21 for natural science.

A student who elects economics as a major will normally have earned 10 semester hours credit in the lower division courses in economics prior to beginning the advanced work of the junior year. These lower division courses must be completed with an average grade of not less than "C".

The specific courses comprising the student's program of study should be selected with the aid of a faculty adviser in terms of the student's objectives and major interest. Attention is directed to requirements under the American Civilization Program.

STUDY PROGRAM FOR ECONOMICS MAJOR

<i>Freshman Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Sp. 18, 19—Introductory Speech.....	1	1
Econ. 4, 5—Economic Developments.....	2	2
Eng. 1, 2—Composition and American Literature.....	3	3
Math. 5, 6 or 10, 11 or 18, 19.....	3	3
G. & P. 1—American Government <sup>1</sup> .....	3	..
Foreign Language or B. A. 10, 11.....	3-2	3-2
A. S. 1, 2—Basic Air Science (men) .....	2	2
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women).....	..	2
Physical Activities (men and women).....	1	1
Elective .....	..	3
Total .....	17-18	17-18

<sup>1</sup> See American Civilization Program, page 3.

## Foreign Service and International Relations Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4, or 5, 6—Composition and World or English Literature	3	3
Econ. 31, 32—Principles of Economics.....	3	3
Foreign Language or Geog. 1, 2.....	3-2	3-2
Natural Science or B. A. 20, 21.....	3	3
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
A. S. 3, 4—Basic Air Science (men).....	2	2
Physical Activities (men and women).....	1	1
Total .....	15-18	15-18
<i>Junior Year</i>		
Econ. 140—Money and Banking .....	3	..
Econ. 132—Advanced Economic Principles.....	3	..
Econ. 102—National Income Analysis.....	..	3
B. A. 130—Elements of Business Statistics .....	..	3
Econ. 160—Labor Economics .....	3	..
Econ. 131—Comparative Economic Systems .....	..	3
Electives in Economics, Government and Politics, and Business Administration <sup>2</sup> .....	6	6
Total .....	15	15
<i>Senior Year</i>		
Econ. 136—International Economic Policies and Relations or B. A. 184—Public Utilities.....	3	..
Econ. 142—Public Finance and Taxation.....	..	3
Electives in Economics, Government and Politics and Business Administration <sup>2</sup> .....	12	12
Total.....	15	15

### III. FOREIGN SERVICE AND INTERNATIONAL RELATIONS

If a student expects to enter the foreign service, he should be well grounded in the language, geography, history, and politics of the region of his anticipated location as well as in the general principles and practices of organization and administration. It should be recognized that only a limited training can be secured during the undergraduate period. When more specialized or more extensive preparation is required, graduate work should be planned. The individual program in either instance, however, should be worked out under the guidance of a faculty adviser. The following study program is offered as a guide in the selection of subjects. Attention is directed to requirements under the American Civilization Program.

<sup>1</sup> See American Civilization Program, page 3.

<sup>2</sup> Other electives may be selected with the approval of the Head of the Department of Economics. Normally these electives must be on the junior and senior level.

# Foreign Service and International Relations Curriculum

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature .....	3	3
G. & P. 1—American Government <sup>1</sup> .....	3	..
Foreign Language (Selection) .....	3	3
Geog. 1, 2—Economic Resources .....	2	2
Econ. 4, 5—Economic Developments .....	2	2
Math. 5, 6 or 10, 11 .....	3	3
A. S. 1, 2—Basic Air Science (men) .....	2	2
Hea. 4—Community Health (women) .....	..	2
Hea. 2—Personal Health (women) .....	2	..
Physical Activities (men and women) .....	1	1
Elective .....	..	3
Total .....	19	19
<i>Sophomore Year</i>		
Eng. 3, 4, or 5, 6—Composition and World or English Literature	3	3
Foreign Language (Continuation of freshman year selection)	3	3
Econ. 31, 32—Principles of Economics .....	3	3
H. 5, 6—History of American Civilization <sup>2</sup> .....	3	3
G. & P.—Comparative Government, selection in accordance with the student's need .....	2	2
Sp. 18, 19—Introductory Speech .....	1	1
A. S. 3, 4—Basic Air Science (men).....	2	2
Physical Activities (men and women) .....	1	1
Total .....	16-18	16-18
<i>Junior Year</i>		
B. A. 150a—Marketing Principles and Organization .....	3	..
Econ. 140—Money and Banking .....	3	..
Econ. 160—Labor Economics .....	..	3
G. & P. 101—International Political Relations .....	..	3
B. A. 130—Elements of Business Statistics .....	3	..
Econ. 131—Comparative Economic Systems .....	..	3
Ec. Geog.—Selection of Regional division to fit student's needs	3	3
Electives to meet student's major interest .....	3	3
Total .....	15	15

<sup>1</sup> Those exempted by University examination shall select a substitute course as indicated on page 4, paragraph 3, or in government and politics.

<sup>2</sup> See American Civilization Program, page 3.

Senior Year	Semester	
	I	II
G. & P. 102—International Law .....	..	3
G. & P. 106—American Foreign Relations .....	3	..
G. & P. 131, 132—Constitutional Law .....	3	3
B. A. 189—Government and Business .....	3	..
Econ. 132—Advanced Economic Principles or Econ. 134, Con- temporary Economic Thought .....	3	..
G. & P. 181—Administrative Law .....	..	3
Econ. 136—International Economic Policies and Relations ....	3	..
Econ. 149—International Finance and Exchange .....	..	3
Electives to meet student's major interest .....	..	3
Total .....	15	15

SUGGESTED ELECTIVES:

American History 127, 129, 133, 135, 145, and 146.

European History 175, 176, 185, 186, and History 191—History of Russia; History 195—The Far East.

Government and Politics 7, 8, 9, 10, 105, 108, 154, and 197.

## IV. GEOGRAPHY

This curriculum is designed to aid the student in securing the facts concerning the major geographical areas of the world and in studying and analyzing the manner in which these facts affect economic, political, and social activities. The student interested in international trade, international political relations, diplomacy, overseas governments, and national aspirations will find the courses in this department of great practical value. Work is offered on both the undergraduate and the graduate levels.

Students who expect to enroll in the engineering and professional schools and those who are planning to enter the fields of business and public administration, or foreign service, will find courses in geography of material value to them in their later work. Openings exist for well-trained geographers in government service, in universities, colleges, and high schools, as well as in private business. A student of geography should choose his courses to meet the requirements for his major objective, be it undergraduate major or minor, or a Master of Arts, or a Doctor of Philosophy degree. He should consult the Graduate School Announcements for the general requirements for the advanced degrees.

### REQUIREMENTS FOR AN UNDERGRADUATE MAJOR IN GEOGRAPHY

A student majoring in geography is required to complete satisfactorily 120 semester hours of work in addition to the required work in air science, hygiene, and physical activities. A general average of at least "C" is required for graduation. Only courses in which the student receives a grade of "C" or above will be counted toward the major.



## *Geography Curriculum*

The specific requirements for the geography major are:

I. Geog. 10 and 11 (3, 3), or equivalent; Geog. 30 (3); Geog. 35 (3); Geog. 40 and 41 (3,3); Geog. 170 (3) and 18 hours in other geography courses numbered 100 to 199, of which 6 hours must be in non-regional courses; a total of 39 hours in geography.

II. Social Sciences—G. & P. 1 (3); Econ. 31 and 32 (3, 3); H. 5, 6 (3, 3); Soc. 105 (3); a total of 18 semester hours.<sup>1</sup>

III. Natural Sciences—Botany 1 and 113 or 102 (4, 2 or 3); Agron. 114 or equivalent (4); Chem. 1 (4). Total of 13 (14) semester hours.

IV. English—Eng. 1 and 2 (3, 3) and 3, 4, or 5, 6 (3, 3); Speech 18, 19 (1, 1); a total of 14 semester hours.<sup>1</sup>

V. Foreign Language and Literature—12 semester hours in one language, unless an advanced course is taken.

VI. Air Science, hygiene, and physical activities. The present University requirement is 12 semester hours in air science and physical activities for able-bodied male students. Women students are required to take 8 semester hours credit in hygiene and physical activities.

A student who elects geography as a major must have earned eighteen semester hours credit in the prerequisite courses in geography prior to beginning the advanced work of the junior year. These are normally taken during the freshman and sophomore years. Only courses in which the student receives a grade of "C" or above will be counted toward the major.

A minor in geography should consist of Geog. 10 and 11 (3, 3), Geog. 30 (3) and such other courses as the major adviser deems suitable.

For the guidance of those who expect to do graduate work in geography, it should be emphasized that the Department of Geography is particularly interested in the appraisal of natural resources in relation to economic, social and political developments; it aims to encourage study of the natural resource base of the culture of an area. This necessitates, on the one hand, an elementary knowledge of certain of the physical sciences as a basis for the physical aspects of geographic study and resource analysis. On the other hand, a certain amount of knowledge of economics, of sociology, and of political organization is necessary in order to understand stages of resource utilization and the social consequences.

The specific courses comprising the student's program of studies should be selected with the aid of a faculty adviser from the Department of Geography in terms of the student's objective and major interests. Attention is directed to requirements under the American Civilization Program.

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<sup>1</sup> See American Civilization Program, page 3.

CARTOGRAPHY AND PLANNING

Special study programs are available for those who wish to concentrate in cartography, and for those who wish to prepare for geographic work in planning agencies.

STUDY PROGRAM FOR GEOGRAPHY MAJORS

	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
<i>Freshman Year</i>		
Geog. 10, 11—General Geography .....	3	3
Chem. 1—Introductory Chemistry .....	4	..
Bot. 1—General Botany .....	..	4
Sp. 18, 19—Introductory Speech .....	1	1
G. & P. 1—American Government <sup>1</sup> .....	3	..
Eng. 1, 2—Composition and American Literature .....	3	3
Foreign Language .....	3	3
A. S. 1, 2—Basic Air Science (men) .....	2	2
Hea. 2—Personal Health (women) .....	2	..
Hea. 4—Community Health (women) .....	..	2
Physical Activities (men and women) .....	1	1
Total .....	20	17
<i>Sophomore Year</i>		
Geog. 30—Principles of Morphology .....	3	..
Geog. 35—Map Reading and Interpretation .....	..	3
Geog. 40—Principles of Meteorology .....	3	..
Geog. 41—Introductory Climatology .....	..	3
H. 5, 6—History of American Civilization .....	3	3
Eng. 3, 4 or 5, 6—Composition and Readings in Literature....	3	3
Foreign Language .....	3	3
A. S. 3, 4—Basic Air Science (men).....	2	2
Physical Activities (men and women) .....	1	1
Total .....	16-18	16-18
<i>Junior Year</i>		
Bot. 113—Plant Geography .....	2	..
Agro. 114—Soil Geography .....	..	4
Soc. 105—Cultural Anthropology .....	..	3
Econ. 31, 32—Principles of Economics .....	3	3
Geog.—Selection to fit student's needs .....	6	3
Electives, with adviser's consent.....	6	3
Total .....	17	16
<i>Senior Year</i>		
Geog. 170—Local Field Course .....	3	..
Geog.—Selection to fit student's needs .....	6	6
Electives, with adviser's consent.....	6	3
Total .....	15	12

<sup>1</sup> See American Civilization Program, page 3.

## V. GOVERNMENT AND POLITICS

### GOVERNMENT AND POLITICS MAJOR AND MINOR REQUIREMENTS

In this course of study, the following conditions are to be observed: (1) G. & P. 1, American Government, or its equivalent, is prerequisite to all other courses offered by the Department. Exemption from G. & P. 1 by University examination is equivalent to this prerequisite, and students exempted may not take G. & P. 1 for credit. Students taking this course of study, who are not so exempted, must complete G. & P. 1 with a grade of "C" or better. (2) In this curriculum, at least 33 hours of Government and Politics, in addition to G. & P. 1, or its equivalent, must be completed with a grade of "C" or better. (3) The electives of the junior and senior years are to be chosen from the list suggested below, unless consent to take other courses is obtained from the Head of the Department. Electives in Government and Politics and in related fields are to be chosen to make an integrated course of study. Attention is directed to requirements under the American Civilization Program.

	Semester	
	I	II
<i>Freshman Year</i>		
G. & P. 1—American Government <sup>1</sup> .....	3	..
Eng. 1, 2—Composition and American Literature .....	3	3
Math. 5, 6 or 10, 11 .....	3	3
Econ. 4, 5—Economic Developments .....	2	2
Sp. 18, 19—Introductory Speech .....	1	1
Foreign Language .....	3	3
A. S. 1, 2—Basic Air Science (men) .....	2	2
Hea. 2—Personal Health (women) .....	2	..
Hea. 4—Community Health (women) .....	..	2
Physical Activities (men and women) .....	1	1
Elective .....	..	3
Total .....	18	18
<i>Sophomore Year</i>		
G. & P. 4—State Government and Administration .....	3	..
G. & P. 5—Local Government and Administration or Psych. 1 (Introduction to Psychology) or Soc. 52 (Criminology) ..	..	3
Eng. 3, 4, or 5, 6—Composition and World or English Literature ..	3	3
Foreign Language .....	3	3
Econ. 31, 32—Principles of Economics .....	3	3
H. 5, 6—History of American Civilization <sup>2</sup> .....	3	3
A. S. 3, 4—Basic Air Science (men) .....	2	2
Physical Activities (men and women) .....	1	1
Total .....	16-18	16-18

<sup>1</sup> Those exempted by University examination shall select a substitute course as indicated on page 4, paragraph 3, or in Government and Politics.

<sup>2</sup> See American Civilization Program, page 3.

	Semester	
	I	II
<i>Junior Year</i>		
G. & P. 7 or 9, 8 or 10—Comparative Government .....	2	2
G. & P. 110—Public Administration .....	3	..
G. & P. 141—History of Political Theory .....	3	..
G. & P. 174—Political Parties .....	3	..
G. & P. 124—Legislatures and Legislation .....	..	3
G. & P.—(Elective) .....	..	3
Electives .....	6	9
Total .....	17	17
<i>Senior Year</i>		
G. & P. 101—International Political Relations .....	3	..
G. & P. 131-132—Constitutional Law .....	3	3
One full year of advanced Economics or B.A. courses .....	3	3
Electives .....	6	9
Total .....	15	15

Suggested electives: Any G. & P. courses not required above; any history courses related to the student's integrated course of study.

Econ. 131—Comparative Economic Systems	B. A. 164—Labor Legislation and Court Decisions
Econ. 132—Advanced Economic Principles	B. A. 180, 181—Business Law
Econ. 134—Contemporary Economic Thought	B. A. 189—Business and Government
Econ. 140—Money and Banking	Phil. 155—Logic
Econ. 142—Public Finance and Taxation	Psych. 21—Social Psychology
Econ. 160—Labor Economics	Psych. 122—Advanced Social Psychology
B. A. 130—Elements of Business Statistics	Soc. 52—Criminology
	Soc. 147—Sociology of Law
	Soc. 186—Sociological Theory

## VI. JOURNALISM AND PUBLIC RELATIONS

The Department offers two professional majors for undergraduate students of superior writing ability: one in editorial journalism, for those who seek beginning news jobs upon graduation; the other in public relations, for those who plan to work in public relations, in public information, or on company publications. The curricula also provide the foundation for a broad education, in addition to understanding of the significance and responsibilities of communications professions as integral forces in society.

A student may take as many as 12 semester hours in a subject other than his major in addition to requirements. Specialized jobs are most attractive financially. Journalism majors ordinarily elect secondary concentrations in such fields as agriculture, home economics, business administration, advertising, foreign language, science, social and political sciences, psychology, philosophy. Public relations majors choose theirs from business administration, advertising, political and social sciences, psychology, foreign language. Other electives may be approved by the adviser in this Department.

Office Techniques may be taken for lower-division elective credit (courses numbered below 100). Since all work in the technical courses of the Department of Journalism and Public Relations is typewritten, those who cannot type at least 35 words per minute should enroll in O. T. 1 before taking Journalism 10. Women planning to seek combination journalism-secretarial or public relations-secretarial jobs upon graduation may take typing and shorthand for lower-division elective credit.

Since 57 hours of upper-division work (courses numbered 100 or more) are required for graduation in this Department, the student should use his electives and required courses the first two years to work off all prerequisites for his upper-division studies. No lower-division course can substitute for an upper-division elective.

To enroll in an upper-division course, the student must have accumulated at least 56 hours of academic work (exclusive of air science and physical activities), with an over-all grade average of at least 2.0 ("C").

To enroll in an upper-division course in this Department, a major must have earned at least "B" in Journalism 10 or 11. A major who makes less than a "C" in an upper-division required course is asked to repeat the course and/or change his major.

A student may declare his major in this Department when he enrolls in it at the beginning of any semester, and ordinarily he will be advised from that time until graduation by the same adviser in the Department. In no case, however, can one be graduated with a major in this Department without having spent at least four semesters as a major in one of its curricula.

Majors are urged to work on a student publication throughout their college residence, and to obtain professional experience in the summers.

The Department maintains close working relations with professionals and their organizations in this area. One of the purposes is to provide speakers, trips, laboratories, and other types of training for students enrolled in the Department's technical courses. The student is notified in advance of each event, and his participation is required.

A required part of the journalism major's education consists of training on the *Baltimore Sunpapers* or *Baltimore News-Post* and on nearby weeklies.

Advanced reporting students spend one afternoon a week with *Sun* or *News-Post* reporters on police and city hall beats; advanced editing students spend one afternoon a week at the central copy desk or at the rewrite desk.

Outside work necessitates enrollment in less than a normal program of study, and in no case should the student attempt to work full time and take more than a course or two.

Listed below are the required curricula in journalism and in public relations. Each curriculum requires a minimum of 30 hours in the Department, and not more than 40 hours in the Department is permitted.



LOWER-DIVISION CURRICULA (JOURNALISM, PUBLIC RELATIONS)

JOURNALISM STUDY PROGRAM

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Elective Group I <sup>1</sup> .....	3	..
G. & P. 1—American Government <sup>1</sup> .....	..	3
Geog. 1, 2—Economic Resources and Econ. 4, 5—Economic Developments (or foreign language) .....	4-3	4-3
Math. 5, 6—General Mathematics and Mathematics of Finance (or natural science).....	3-4	3-4
Sp. 18, 19—Introductory Speech .....	1	1
Physical Activities (men and women).....	1	1
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women).....	..	2
A. S. 1, 2—Basic Air Science (men).....	2	2
Total .....	17	17
<i>Sophomore Year</i>		
Journ. 10—Introduction to Journalism .....	3	..
Eng. 3, 4, or 5, 6—Composition and World or English Literature	3	3
H. 5, 6—History of American Civilization .....	3	3
Econ. 31, 32—Principles of Economics .....	3	3
B. A. 10, 11—Organization and Control (or foreign language)	2-3	2-3
Physical Activities (men and women) .....	1	1
A. S. 3, 4—Basic Air Science (men) .....	2	2
Elective .....	..	3
Total .....	17	17
<i>Junior Year</i>		
Journ. 160—News Editing I .....	3	..
Journ. 163—Newspaper Typography .....	3	..
Journ. 176—Newsroom Problems .....	..	3
Journ. 181—Press Photography .....	..	3
G. & P. 178—Public Opinion .....	3	..
Phil. 130—Conflict of Ideals in Western Civilization, or		
Phil. 154—Political and Social Philosophy.....	..	3
Electives .....	7	7
Total .....	16	16
<i>Senior Year</i>		
Journ. 161—News Editing II .....	..	3
Journ. 165—Feature Writing .....	..	3
Journ. 175—Reporting of Public Affairs .....	3	..
Journ. 191—Law of the Press .....	..	3
Journ. 192—History of American Journalism .....	3	..
B. A. 189—Business and Government (either semester) ....	3	..
Electives .....	7	7
Total .....	16	16

<sup>1</sup> See American Civilization Program, page 3.

## Office Management and Techniques Curriculum

### PUBLIC RELATIONS STUDY PROGRAM

Requirements for the first two years of the public relations curriculum are the same as those in the journalism program (see above).

The following curriculum is taken in the junior and senior years by the public relations student who plans to work for a public relations firm or in a public relations department.

For electives preparatory to public relations work in business, the student should look to at least the following fields: business administration, advertising, economics, business statistics, personnel management, and marketing. For government public relations work: public administration, American history, international relations, political parties, etc. Good elective courses for any public relations major may be found in psychology, sociology, speech, English, radio, and education.

	Semester	
	I	II
<i>Junior Year</i>		
Journ. 160—News Editing I .....	3	..
Journ. 165—Feature Writing .....		3
P. R. 166—Public Relations .....	3	..
Journ. 181—Press Photography .....	..	3
P. R. 194—Public Relations Cases .....	2	..
Phil. 130—Conflict of Ideals in Western Civilization, or		
Phil. 154—Political and Social Philosophy.....	..	3
Electives .....	8	7
Total .....	16	16
<i>Senior Year</i>		
P. R. 170—Publicity Techniques .....	3	..
P. R. 171—Industrial Journalism .....	..	2
Journ. 161—News Editing II, or Journ. 162—Community Jour- nalism, or Journ. 175—Reporting of Public Affairs.....	..	3
Journ. 191—Law of the Press .....	..	3
P. R. 195—Seminar in Public Relations .....	2	..
G. & P. 178—Public Opinion.....	3	..
Electives .....	8	8
Total .....	16	16

## VII. OFFICE MANAGEMENT AND TECHNIQUES

### I. MANAGEMENT AND OFFICE AUTOMATION

As business administrators become increasingly dependent upon records of all types to control their business activities, clear channels of information and communication are increasingly difficult to establish and maintain. Astute management finds through office automation a valuable communicative tool in the planning, organizing, controlling, and coordinating of business data so that the objectives of an enterprise can be achieved most effectively. Consequently,

today simplified data processing is becoming mandatory in private and public administration.

The student interested in this field should realize that his background education should include a broad understanding of business and administration in general. In addition, it is essential that the student develop the ability to analyze effectively the elements in an administrative situation while recognizing the functional needs of an organization. The program of studies in management and office automation is designed to meet the needs of students who wish to concentrate on developing managerial skills and competencies in data processing as they apply to the functional fields of finance, marketing, production, personnel and accounting. Because of the rapidly increasing developments in office automation in all types of business, the following curriculum will be a valuable aid in preparing for a career in this field of administration. Attention is directed to requirements under the American Civilization Program.

## MANAGEMENT AND OFFICE AUTOMATION

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Math. 5, 6—General Mathematics, Mathematics of Finance....	3	3
G. & P. 1—American Government <sup>1</sup> .....	3	..
Psych. 1—Introduction to Psychology.....	..	3
Econ. 4, 5—Economic Developments.....	2	2
Geog. 1, 2—Economic Resources .....	2	2
B. A. 10, 11—Organization and Control.....	2	2
A. S. 1, 2—Basic Air Science (men) .....	2	2
Hea. 2, 4—Personal and Community Health (women).....	2	2
Physical Activities (men and women) .....	1	1
Total .....	18	18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature.....	3	3
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
Econ. 31, 32—Principles of Economics.....	3	3
B. A. 20, 21—Principles of Accounting.....	4	4
B. A. 14—Survey of Office Machines.....	2	..
O. T. 1—Principles of Typewriting.....	..	2
A. S. 3, 4—Basic Air Science (men) .....	2	2
Physical Activities (men and women).....	1	1
Total .....	16-18	16-18

<sup>1</sup>See American Civilization Program, page 3.

Office Management and Techniques Curriculums

	Semester	
	I	II
<i>Junior Year</i>		
B. A. 166—Business Communications .....	3	..
B. A. 112—Records Management .....	..	2
B. A. 100—Office Operations and Management.....	3	..
B. A. 101—Integrated Data Processing for Internal Control....	..	3
B. A. 121—Cost Accounting .....	..	4
B. A. 130—Elements of Business Statistics.....	3	..
Econ. 140—Money and Banking .....	3	..
Econ. 160—Labor Economics .....	..	3
B. A. 150a—Marketing Principles and Organization.....	3	..
B. A. 169—Industrial Management .....	..	3
Sp. 18, 19—Introductory Speech.....	1	1
Total .....	16	16
<i>Senior Year</i>		
B. A. 102—Electronic Data Processing Systems.....	3	..
B. A. 180, 181—Business Law.....	4	4
B. A. 160—Personnel Management .....	3	..
B. A. 103—Office Automation and Management Problems....	..	3
B. A. 150—Marketing Management .....	..	3
Electives .....	6	6
Total .....	16	16

2. EXECUTIVE SECRETARIAL

This program will appeal to those who realize that positions in secretarial service require much more than office skills (typewriting and shorthand). This curriculum is designed primarily to prepare students for a secretarial career with administrative responsibilities. The development of the student's capacity to plan, organize, direct, and execute is the guiding principle followed in this curriculum. These are essential tools, but an understanding of management and a broad background in the humanities is important for the more responsible positions.

PLACEMENT EXAMINATION

Students with previous training in shorthand and/or typewriting are required to take a placement examination in those subjects at the time of their first registration in a shorthand or typewriting course at the University.

If a student with previous training is unable to meet the prerequisite standard of achievement for the advanced courses, he may change to a less advanced course with less than regular credit.

Credit will be given only for the work done in residence.

## RECORD OF COMPETENCY

Students must make a grade of "C" in each course in office techniques sequences, before they may progress to the next advanced course. A major earning less than a "C" grade in an advanced course is asked to repeat the course.

The following program of study is designed to develop potential aptitudes to an effective end. Attention is directed to requirements under the American Civilization Program.

COMBINED EXECUTIVE SECRETARIAL AND  
BUSINESS TEACHING CURRICULUM

Capable students may elect courses offered by the College of Education in such a manner as to qualify themselves for business teaching in high schools.

## EXECUTIVE SECRETARIAL PROGRAM

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government <sup>1</sup> .....	3	..
Psych. 1—Introduction to Psychology <sup>1</sup> .....	..	3
Elect Math. 5, 6; H. 1, 2 or year of science <sup>2</sup> .....	3	3
O. T. 1, 2—Principles of Typewriting, Intermediate Typewriting .....	2	2
O. T. 12, 13—Principles of Shorthand.....	3	3
Sp. 18, 19—Introductory Speech.....	1	1
Hea. 2, 4—Personal and Community Health (women).....	2	2
A. S. 1, 2—Basic Air Science (men).....	2	2
Physical Activities (men and women).....	1	1
Total .....	18	18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature.....	3	3
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
Econ. 31, 32—Principles of Economics.....	3	3
O. T. 16, 18—Advanced Gregg Shorthand.....	2	2
O. T. 17, 19—Problems in Gregg Transcription.....	2	2
O. T. 10—Office Typewriting Problems.....	2	..
B. A. 14—Survey of Office Machines.....	..	2
A. S. 3, 4—Basic Air Science (men) .....	2	2
Physical Activities (men and women).....	1	1
Total .....	16-17	16-17

<sup>1</sup> See American Civilization Program, page 3.

<sup>2</sup> Any student failing the University entrance examination in mathematics is required to satisfactorily complete Math. 0, Basic Mathematics the first semester enrolled in this program.



## Bureau of Business and Economic Research

	Semester	
	I	II
<i>Junior Year</i>		
B. A. 20, 21—Principles of Accounting.....	4	4
O. T. 110—Administrative Secretarial Procedures.....	3	..
B. A. 100—Office Operations and Management.....	..	3
B. A. 166—Business Communications .....	3	..
Econ. 140—Money and Banking.....	..	3
B. A. 150a—Marketing Principles and Organization.....	3	..
B. A. 112—Records Management .....	..	2
Elect courses at 100 level in Sociology, Government and Politics, Psychology, Humanities .....	3	3
Total .....	16	15
<i>Senior Year</i>		
B. A. 180, 181—Business Law.....	4	4
B.A. 101—Integrated Data Processing for Internal Control....	3	..
B. A. 102—Electronic Data Processing Systems.....	..	3
O. T. 114—Secretarial Office Experience .....	..	3
Econ. 160—Labor Economics .....	3	..
B. A. 160—Personnel Management .....	..	3
Electives .....	6	3
Total .....	16	16

## VIII. BUREAU OF BUSINESS AND ECONOMIC RESEARCH

The Bureau of Business and Economic Research is a laboratory for the practical study of business and economic problems. It has three principal functions: first, to train students in the field of business and economic research; second, to disseminate information concerning business and economic conditions in Maryland, or which affect Maryland interests, and third, to offer advice on research procedures and sources to interested business firms, governmental units, and civic groups.

Through the facilities of the Bureau qualified interested students can obtain practical experience in research work. This involves the application of techniques and principles studied in the class room to actual business and governmental problems.

The Bureau—through its direct contact with business, government, labor and the professions and in its research into problems in these fields—serves as an important source of information relative to business and economic conditions and developments in this region. This information is made available, in part, by means of Bureau publications and, in part, by direct inquiry to the Bureau. This service is supplemented by active cooperation with individual business firms, official agencies, and civic organizations within the state who request advice in the study of specific problems which are recognized as having an important bearing upon public welfare. The Bureau welcomes the opportunity to be of real service to such organizations.

## IX. BUREAU OF GOVERNMENTAL RESEARCH

The Bureau of Governmental Research was organized in 1947, then called the Bureau of Public Administration. It is closely allied, both in function and personnel, with the Department of Government and Politics. The Department of Government and Politics is the teaching agency; the Bureau of Governmental Research is the research agency. The Bureau's activities relate primarily to the problems of state and local government in Maryland. The Bureau engages in research and publishes findings with reference to local, state and national government. It undertakes surveys and offers its assistance and service to units of government in Maryland. It serves as a clearing house of information for the benefit of Maryland state and local government. The Bureau furnishes an opportunity for qualified interested students to secure practical experience in research in government problems.

The Municipal Technical Advisory Service, established in 1959 as a division of the Bureau, provides consulting services, on a practical level, to the municipal governments of the State. These services are available in so far as practicable in the fields of organization and management, engineering and public works, municipal ordinance and charter drafting, and public information.

## X. MARYLAND MUNICIPAL LEAGUE

The office of the Maryland Municipal League, an organization of Maryland cities, is located in the College of Business and Public Administration. The League provides opportunities for association to municipal officials, offers services to city governments and organizes legislative programs affecting municipal affairs. It publishes monthly the Maryland Municipal News. The League's mailing address is Maryland Municipal League, Box 276, College Park, Maryland.

## COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: Courses for advanced undergraduates and graduates. Not all courses numbered 100 to 199 may be taken for graduate credit.

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters. Courses not otherwise designated are lecture courses. The number of credit hours is shown by the arabic numeral in parentheses after the title of the course. A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

### BUSINESS ORGANIZATION AND ADMINISTRATION

*Professors:* FREDERICK, CALHOUN, CLEMENS, COOK, COVER, FISHER, GENTRY, PYLE, REID, SYLVESTER, SWEENEY, TAFF, WEDEBERG AND WRIGHT.

*Associate Professors:* DAWSON, NELSON AND SPIVEY.

*Assistant Professors:* ANDERSON, ASHMEN, DAIKER, EDELSON AND LEE.

*Instructors:* CLICKNER, HEINTZE, HEYE, HIMES, WAGNER AND WATROUS.

*Lecturer:* TIERNEY.

#### *B.A. 10, 11. Organization and Control. (2, 2)*

First and second semesters. Required in all business administration curriculums. A survey course treating the internal and functional organization of a business enterprise. B.A. 11 includes industrial management, organization and control

#### *B.A. 14. Survey of Office Machines. (2)*

Prerequisite, sophomore standing. Laboratory fee, \$7.50. The various types of office business machines are surveyed, their capacities and special functions compared. Skill is developed through actual use and demonstration of such machines as: accounting, duplicating, dictating and transcribing, adding and calculating, and other functional types of machines and equipment. The course is designed also to give special training in the handling of practical business problems with machine applications.

#### *B.A. 20, 21. Principles of Accounting. (4, 4)*

First and second semesters. Required in all business organization curriculums. Prerequisite, sophomore standing. The fundamental principles and problems involved in accounting for proprietorships, corporations and partnerships.

### *For Advanced Undergraduates and Graduates*

#### *B.A. 100. Office Operations and Management. (3)*

Prerequisite, junior standing. Deals with the principles of scientific management as

they apply to the examination, improvement, installation, and operation of the most effective paperwork methods and systems that a given organization can use to achieve its objectives. Procedure flow analysis and form design for control of paperwork; process, work distribution, and layout charts, distribution of authority and responsibility for office activities are among the areas considered.

*B.A. 101. Integrated Data Processing for Internal Control. (3)*

Prerequisite, junior standing. Laboratory fee, \$10.00. Comprises the bridge between accounting principles and the actualities of handling a large volume of data in modern business and government operations. Considers the measures necessary to marshal accounting and other information for internal control and for service to management at all levels. The basic principles involved in the combining of accounting and recording machines through a keyboard "language" that is "understood" by other machines will be presented. Punched-card tabulating and punched-tape methods are studied. Graphic flowchart methods are used to integrate these data-gathering techniques into normal accounting and reporting processes.

*B.A. 102. Electronic Data Processing Systems. (3)*

Prerequisite, B.A. 101, junior standing. Laboratory fee, \$10.00. The electronic digital computer and its use as a business data processor. The course includes the following areas: (1) organization of business information; (2) characteristics of commercially available equipment; (3) flow charts; (4) problems in reduction of processes to component parts; and (5) programming typical internal control problems in business and government.

*B.A. 103. Office Automation and Management Problems. (3)*

Prerequisite, B.A. 101 or B.A. 102. Administrative problems experienced in introducing computer systems, feasibility studies, and the effect of office automation upon management and organization applied to case situations. Procedure distribution charts, flow diagrams, process charts, and other tools used by the methods analysts are developed in actual situations.

*B.A. 110, 111. Intermediate Accounting. (3, 3)*

First and second semesters. Prerequisite, a grade of "B" or better in B.A. 21 for majors in accounting or consent of instructor. A comprehensive study of the theory and problems of valuation of assets, application of funds, corporation accounts and statements, and the interpretation of accounting statements.

*B.A. 112. Records Management. (2)*

First and second semesters. Prerequisite, junior standing. Laboratory fee, \$7.50. Specific management methods and techniques that have proved valuable in the creation, use, maintenance, protection and disposition of records are studied.

*B.A. 116. Public Budgeting. (3)*

Prerequisites, B.A. 21 and Econ. 32. A study of budgetary administration in the United States, including systems of financial control and accountability, the settlement of claims, centralized purchasing and the reporting of financial operations.

*B.A. 118. Governmental Accounting. (3)*

Prerequisite, B.A. 111, or consent of instructor. The content of this course covers the scope and functions of governmental accounting. It considers the principles generally



## *Business Organization and Administration*

applicable to all forms and types of governmental bodies and a basic procedure adaptable to all governments.

### *B.A. 121. Cost Accounting. (4)*

Prerequisite, a grade of "B" or better in B.A. 21 for majors in accounting or consent of instructor. A study of the fundamental procedures of cost accounting, including those for job order, process and standard cost accounting systems.

### *B.A. 122. Auditing Theory and Practice. (3)*

First semester. Prerequisite, B.A. 111. A study of the principles and problems of auditing and application of accounting principles to the preparation of audit working papers and reports.

### *B.A. 123. Income Tax Accounting. (4)*

Prerequisite, a grade of "B" or better in B.A. 21 for majors in accounting, or consent of instructor. A study of the important provisions of the Federal Tax Laws, using illustrative examples, selected questions and problems, and the preparation of returns.

### *B.A. 124, 126. Advanced Accounting. (3, 3)*

First and second semesters. Prerequisite, B.A. 111. Advanced accounting theory applied to specialized problems in partnerships, estates and trusts, banks, mergers and consolidations, receiverships and liquidations; also budgeting and controllership.

### *B.A. 125. C.P.A. Problems. (3)*

Second semester. Prerequisite, B.A. 124, or consent of instructor. A study of the nature, form and content of C.P.A. examinations by means of the preparation of solutions to, and an analysis of, a large sample of C.P.A. problems covering the various accounting fields.

### *B.A. 127. Advanced Auditing Theory and Practice. (3)*

Second semester. Prerequisite, B.A. 122. Advanced auditing theory, practice and report writing.

### *B.A. 128. Advanced Cost Accounting. (2)*

Prerequisite, B.A. 121. A continuation of basic cost accounting with special emphasis on process costs, standard costs, joint costs and by-product costs.

### *B.A. 129. Apprenticeship in Accounting. (0)*

Prerequisites, minimum of 20 semester hours in accounting and the consent of the accounting staff. A period of apprenticeship is provided with nationally known firms of certified public accountants from about January 15 to February 15, and for a semester after graduation.

### *B.A. 130. Elements of Business Statistics. (3)*

Prerequisite, junior standing. Required for graduation. Laboratory fee, \$3.50. An introductory course. Emphasis is placed upon statistical inference. Topics covered include statistical observation, frequency distributions, averages, measures of variability, elementary probability, sampling distributions, problems of estimation, simple tests of hypotheses, index numbers, time series, graphical and tabular presentation. Selected applications of the techniques are drawn from economics, industrial management, marketing and accounting.



**B.A. 132. *Sample Surveys in Business and Economics.* (3)**

First semester. Prerequisite, B.A. 130. Laboratory fee, \$3.50. A general course in scientific sample survey techniques. Review of elementary probability, characteristics of good estimators, estimates of observation, simple random sampling, stratified random sampling, cluster sampling, comparison of various sample designs, cost functions, examples of actual survey practices.

**B.A. 133. *Statistical Research and Control Techniques.* (3)**

Second semester. Prerequisite, B.A. 130. Laboratory fee, \$3.50. Review of elementary probability. Population distributions. Sampling distributions: binomial, Poisson, normal, "t", chi-square and F. Estimates and tests of hypotheses concerning the mean, variance and other parameters. Introduction to analysis of variance, linear regression and correlation. Introduction to quality control and acceptance sampling.

**B.A. 134. *Statistical Quality Control.* (3)**

Second semester. Prerequisite, B.A. 130. Laboratory fee, \$3.50. Statistical fundamentals, theory, construction and use of control charts, acceptance sampling by attributes and variables, work sampling and other industrial applications of statistics.

**B.A. 135. *Time Series Analysis and Forecasting.* (3)**

First semester of even-numbered years. Alternates with B.A. 132. Prerequisite, B.A. 133. Laboratory fee, \$3.50. Classical time series analysis, trend, periodic and irregular components, seasonal adjustment, growth curves, recent developments in time series analysis, techniques of forecasting such quantities as labor force, capital formation, demand and sales.

**B.A. 140. *Financial Management.* (3)**

Prerequisites, B.A. 21 and Econ. 140. This course deals with principles and practices involved in the organization, financing, and rehabilitation of business enterprises; the various types of securities and their use in raising funds, apportioning income, risk, and control; intercorporate relations; and new developments. Emphasis on solution of problems of financial policy faced by management.

**B.A. 141. *Investment Management.* (3)**

First semester. Prerequisite, B.A. 140. A study of the principles and methods used in the analysis, selection, and management of investments; investment programs, sources of investment information, security price movements, government, real estate, public utility, railroad, and industrial securities.

**B.A. 142. *Banking Policies and Practices.* (3)**

Second semester. Prerequisite, Econ. 140. A study of the organization and management of the Commercial Bank, the operation of its departments, and the methods used in the extension of commercial credit.

**B.A. 143. *Credit Management.* (3)**

First and second semesters. Prerequisite, B.A. 140. A study of the nature of credit and the principles applicable to its extension and redemption for mercantile and consumer purposes; sources of credit information and analysis of credit reports; the organization and management of a credit department for effective control. Recent developments and effective legal remedies available.

*B.A. 148. Advanced Financial Management. (3)*

Second semester. Prerequisite, B.A. 140. Advanced course designed for students specializing in finance. Emphasis is placed upon the techniques employed by executives in their application of financial management practice to selected problems and cases. Critical classroom analysis is brought to bear upon actual methods and techniques used by business enterprises.

*B.A. 149. Analysis of Financial Statements. (3)*

Prerequisites, B.A. 21, B.A. 140. Analysis of financial statements for the guidance of executives, directors, stockholders, and creditors, valuation of balance sheet items; determination and interpretation of ratios.

*B.A. 150a. Marketing Principles and Organization. (3)*

Prerequisite, Econ. 32 or 37. This is an introductory course in the field of marketing. Its purpose is to give a general understanding and appreciation of the forces operating, institutions employed, and methods followed in marketing agricultural products, natural products, services, and manufactured goods.

*B.A. 150. Marketing Management. (3)*

Prerequisite, B.A. 150a. A study of the work of the marketing division in a going organization. The work of developing organizations and procedures for the control of marketing activities are surveyed. The emphasis throughout the course is placed on the determination of policies, methods, and practices for the effective marketing of various forms of manufactured products.

*B.A. 151. Advertising. (3)*

First semester. Prerequisite, B.A. 150. A study of the role of advertising in the American economy; the impact of advertising on our economic and social life, the methods and techniques currently applied by advertising practitioners, the role of the newspaper, magazine, and other media in the development of an advertising campaign, modern research methods to improve the effectiveness of advertising, and the organization of the advertising business.

*B.A. 152. Advertising Copy and Layout. (3)*

Second semester. Prerequisites, B.A. 151, and senior standing. A study of the practices and techniques of copy writing and layout. The student will participate in exercises designed to teach him the essential principles of writing copy for various media and presenting ideas in visual form. The course deals with the development of ideas rather than art forms.

*B.A. 153. Purchasing Management. (3)*

First semester. Prerequisites, B.A. 150 and senior standing. Determining the proper sources, quality and quantity of supplies, and methods of testing quality; price policies, price forecasting, forward buying, bidding and negotiation; budgets and standards of achievement. Particular attention is given to government purchasing and methods and procedures used in their procurement.

*B.A. 154. Retail Store Management. (3)*

First semester. Prerequisites, B.A. 150 and senior standing. Retail store organization, location, layout and store policy; pricing policies, price lines, brands, credit policies, records as a guide to buying; purchasing methods; supervision of selling; training and supervision of retail sales force; and administrative problems.

**B.A. 155. *Problems in Retail Merchandising.* (3)**

Second semester. Prerequisite, B.A. 154. Designed to develop skill in the planning and control of merchandise stocks. Deals with buying policies, pricing, dollar and unit control procedures, mark-up and mark-down policies, merchandise budgeting, and the gross margin-expense-net earnings relationships.

**B.A. 156. *Marketing Research Methods.* (3)**

Second semester. Prerequisites, B.A. 130 and B.A. 150. This course is intended to develop skill in the use of scientific methods in the acquisition, analysis and interpretation of marketing data. It covers the specialized fields of marketing research, the planning of survey projects, sample design, tabulation procedure and report preparation.

**B.A. 157. *Foreign Trade Procedure.* (3)**

Prerequisites, B.A. 150 and senior standing. Functions of various exporting agencies; documents and procedures used in exporting and importing transactions. Methods of procuring goods in foreign countries; financing of import shipments; clearing through the customs districts; and distribution of goods in the United States.

**B.A. 158. *Advertising Problems.* (3)**

Second semester. Prerequisite, B.A. 151. This course is concerned with the way in which business firms use advertising as a part of their marketing program. The case study method is used to present advertising problems taken from actual business practice. Cases studied illustrate problems in demand stimulation, media selection, advertising research, testing, and statistical control of advertising.

**B.A. 159. *Newspaper Advertising.* (3)**

Second semester. Prerequisite, B.A. 151. A study of the problems of newspaper advertising with special attention to the needs of retail business. The course covers layout, production methods, sales techniques, and classified advertising. Students are encouraged to work in the advertising departments of campus and nearby publications for actual experience.

**B.A. 160. *Personnel Management.* (3)**

Prerequisite, Econ. 160. This course deals with the problems of directing and supervising employees under modern industrial conditions. Two phases of personnel administration are stressed, the application of scientific management and the importance of human relations in this field.

**B.A. 163. *Industrial Relations.* (3)**

Second semester. Prerequisites, B.A. 160 and senior standing. A study of the development and methods of organized groups in industry with reference to the settlement of labor disputes. An economic and legal analysis of labor union and employer association activities, arbitration, mediation, and conciliation; collective bargaining, trade agreements, strikes, boycotts, lockouts, company unions, employee representation, and injunctions.

**B.A. 164. *Recent Labor Legislation and Court Decisions.* (3)**

First semester. Prerequisites, B.A. 160 and senior standing. Case method analysis of the modern law of industrial relations. Cases include the decisions of administrative agencies, courts and arbitration tribunals.

*B.A. 166. Business Communications. (3)*

First and second semesters. Prerequisite, junior standing. A systematic study of the principles of effective written communications in business. The fundamental aim is to develop the ability to write clear, correct, concise, and persuasive business letters and reports.

*B.A. 167. Job Evaluation and Merit Rating. (2)*

First semester. Prerequisites, B.A. 160, B.A. 169 and senior standing. The investigation of the leading job evaluation plans used in industry, study of the development and administrative procedures, analyzing jobs and writing job descriptions, setting up a job evaluation plan, and relating job evaluation to pay scales. Study of various employee merit rating programs, the methods of merit rating, and the uses of merit rating.

*B.A. 169. Industrial Management. (3)*

First and second semesters. Prerequisites, Econ. 160 and B.A. 11. Studies the operation of a manufacturing enterprise. Among the topics covered are product development, plant location, plant layout, production planning and control, methods analysis, time study, job analysis, budgetary control, standard costs, and problems of supervision.

*B.A. 170. Transportation Services and Regulation. (3)*

Prerequisite, Econ. 32 or 37. A general course covering the five fields of transportation, their development, service and regulation. (This course is a prerequisite for all other transportation courses.)

*B.A. 171. Industrial and Commercial Traffic Management. (3)*

Prerequisite, B.A. 170. Covers the details of classification and rate construction for ground and air transportation. Actual experiences in handling tariffs and classifications is provided. It is designed for students interested in the practical aspects of shipping and receiving and is required for all majors in transportation administration.

*B.A. 172. Motor Transportation. (3)*

First semester. Prerequisite, B.A. 170. The development and scope of the motor carrier industry, different types of carriers, economics of motor transportation, services available, federal regulation, highway financing, allocation of cost to highway users, highway barriers.

*B.A. 172a. Motor Carrier Administration. (3)*

Second semester. Prerequisites, B.A. 170 and 172. Over the road and terminal operations and management, the use of management controls, management organization, Interstate Commerce Commission policy as affecting management decisions.

*B.A. 173. Water Transportation. (3)*

Prerequisite, B.A. 170. Water carriers of all types, development and types of services, trade routes, inland waterways, company organization, the American Merchant Marine as a factor in national activity.

*B.A. 174. Commercial Air Transportation. (3)*

Prerequisite, B.A. 170. The air transportation system of the United States; airways, airports, airlines. Federal regulation of air transportation. Problems and services of commercial air transportation; economics, equipment, operations, financing, selling of passenger and cargo services. Air mail development and services.



**B.A. 175. *Airline Administration.* (3)**

Prerequisite, B.A. 174. Practices, systems and methods of airline management; actual work in handling details and forms required in planning and directing maintenance, operations, accounting and traffic transactions, study of airline operations and other manuals of various companies.

**B.A. 176. *Problems in Airport Management.* (3)**

Prerequisite, B.A. 174. Airports classified, aviation interests and community needs, airport planning, construction, building problems. Airports and the courts. Management, financing, operations, revenue sources.

**B.A. 177. *Motion Economy and Time Study.* (3)**

Second semester. Prerequisites, B.A. 169 and senior standing. A study of the principles of motion economy, simo charts, micromotion study, the fundamentals of time study, job evaluation, observations, standard times, allowances, formula construction and wage payment plans.

**B.A. 178. *Production Planning and Control.* (2)**

First semester. Prerequisites, B.A. 169 and senior standing. An analysis of the man-, material-, and machine requirements for production according to the several types of manufacture. The development and application of inventory records, load charts, production orders, schedules, production reports, progress reports and control reports. One lecture period and one laboratory period each week.

**B.A. 179. *Problems in Supervision.* (3)**

Prerequisites, B.A. 160, B.A. 169 and senior standing. A case study course in problems of management and administration with emphasis upon analysis and reasoning applied toward a solution.

**B.A. 180, 181. *Business Law.* (4, 4)**

First and second semesters. Prerequisite, senior standing. Required in all business organization curriculums. Legal aspects of business relationships, contracts, negotiable instruments, agency, partnerships, corporations, real and personal property, and sales.

**B.A. 184. *Public Utilities.* (3)**

Prerequisites, Econ. 32 or 37 and senior standing. Using the regulated industries as specific examples attention is focused on broad and general problems in such diverse fields as constitutional law, administrative law, public administration, government control of business, advanced economic theory, accounting, valuation and depreciation, taxation, finance, engineering and management.

**B.A. 189. *Business and Government.* (3)**

Second semester. Prerequisites, Econ. 32 or 37 and senior standing. A study of the role of government in modern economic life. Social control of business as a remedy for the abuses of business enterprise arising from the decline of competition. Criteria of and limitations on government regulation of private enterprise.

**B.A. 190. *Life Insurance.* (3)**

First semester. Prerequisite, Econ. 32 or 37. A general survey of life insurance: Its institutional development, selection of risks, mathematical calculations, contract pro-



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visions, kinds of policies, their functional uses, industrial and group contracts and government supervision.

### *B.A. 191. Property Insurance. (3)*

Second semester. Prerequisite, Econ. 32 or 37. A study of the insurance coverages written to protect individuals and businesses; fire, extended coverage, business interruption, automobile, liability, fidelity, surety, inland marine and ocean marine. Hazards, rate-making, legal principles, standard forms and business practices are discussed.

### *B.A. 194. Insurance Agency Management. (3)*

First semester. Prerequisite, B.A. 190 or 191. This course deals with the more practical problems and policies of the insurance agent, manager, or broker; the management of his own organization and its relations with the public and home offices. Advanced topics in life insurance and additional coverages in property insurance are considered also.

### *B.A. 195. Real Estate Principles. (3)*

First semester. Prerequisite, Econ. 32 or 37. This course covers the nature and uses of real estate, real estate as a business, basic legal principles, construction problems and home ownership, city planning, and public control and ownership of real estate.

### *B.A. 196. Real Estate Finance. (3)*

Second semester. Prerequisite, Econ. 32 or 37. This course includes consideration of the factors influencing real estate values, methods and techniques in the general appraisal of real estate by brokers and professional appraisers, and general problems in real estate financing.

### *B.A. 197. Real Estate Management. (3)*

Second semester. Prerequisite, B.A. 195 or 196. A study of mortgage banking in its relation to real estate operations, various financial institutions, and the general economy, and a study of real property management with its responsibilities to owners, tenants, employees, and the public.

## *For Graduates*

(Graduate standing and consent of instructor required.)

### *B.A. 210. Advanced Accounting Theory. (2-3)*

Prerequisites, B.A. 111 and graduate standing.

### *B.A. 220. Managerial Accounting. (3)*

*B.A. 221, 222. Seminar in Accounting.*  
(Arranged.)

### *B.A. 226. Accounting Systems. (3)*

*B.A. 228. Research in Accounting.*  
(Arranged.)

- B.A. 229. *Studies of Special Problems in the Fields of Control and Organization.*  
(Arranged.)
- B.A. 240. *Seminar in Financial Management.* (1-3)  
Prerequisites, Econ. 140, B.A. 21, B.A. 140.
- B.A. 249. *Studies of Special Problems in the Field of Financial Administration.*  
(Arranged.)
- B.A. 250. *Problems in Sales Management.* (3)
- B.A. 251. *Problems in Advertising.* (3)
- B.A. 252. *Problems in Retail Store Management.* (3)
- B.A. 257. *Seminar in Marketing Management.*  
(Arranged.)
- B.A. 258. *Research Problems in Marketing.*  
(Arranged.)
- B.A. 262. *Seminar in Contemporary Trends in Labor Relations.*  
(Arranged.)
- B.A. 265. *Development and Trends in Industrial Management.* (3)
- B.A. 266. *Research in Personnel Management.*  
(Arranged.)
- B.A. 267. *Research in Industrial Relations.*  
(Arranged.)
- B.A. 269. *Studies in Special Problems in Employer-Employee Relationships.*  
(Arranged.)
- B.A. 270. *Seminar in Air Transportation.* (3)
- B.A. 271. *Theory of Organization.* (3)
- B.A. 275. *Seminar in Motor Transportation.* (3)
- B.A. 277. *Seminar in Transportation.* (3)
- B.A. 280. *Seminar in Business and Government Relations.*  
(Arranged.)
- B.A. 284. *Seminar in Public Utilities.* (3)
- B.A. 290. *Seminar in Insurance.* (3)
- B.A. 295. *Seminar in Real Estate.* (3)
- B.A. 399. *Thesis.*  
(Arranged.)

## ECONOMICS

*Professors:* DILLARD, GRUCHY AND HAMBERG.

*Lecturers:* DE BEERS AND JOHNSON.

*Associate Professors:* GRAYSON AND GURLEY.

*Assistant Professors:* DALTON, GLADE, MEASDAY, SHELBY AND SMITH.

*Instructors:* ANDERSEN, BARRETT, DAY AND DODGE.

### *Econ. 4, 5. Economic Developments. (2, 2)*

First and second semesters. Freshman requirements in business administration curriculums. An introduction to modern economic institutions—their origins, development, and present status. Commercial revolution, industrial revolution, and age of mass production. Emphasis on developments in England, Western Europe and the United States. (Dillard, Staff.)

### *Econ. 31, 32. Principles of Economics. (3, 3)*

First and second semesters. Prerequisite, sophomore standing. Required in the business administration curriculums. In Econ. 31 basic concepts, the monetary system, the national accounts, national income analysis, and business cycles are introduced. In Econ. 32 emphasis is placed on price theory, distribution, international trade, and economic development. (Grayson, Staff.)

### *Econ. 37. Fundamentals of Economics. (3)*

First and second semesters. Not open to students who have credit in Econ. 31 and 32. Not open to freshmen or to B. P. A. students. A survey of the general principles underlying economic activity. This is the basic course in economics for the American Civilization Program for students who are unable to take the more complete course provided in Econ. 31 and 32. (Smith, Staff.)

## *For Advanced Undergraduates and Graduates*

### *Econ. 102. National Income Analysis. (3)*

First and second semesters. Prerequisite, Econ. 32. Required for economics majors. An analysis of national income accounts and the level of national income and employment. (Hamberg, Staff.)

### *Econ. 130. Mathematical Economics. (3)*

Second semester. Prerequisite, Econ. 102 and 132 or permission of instructor. A course designed to enable economics majors to understand the simpler aspects of mathematical economics. Those parts of the calculus and algebra required for economic analysis will be presented.

### *Econ. 131. Comparative Economic Systems. (3)*

First and second semesters. Prerequisite, Econ. 32 or 37. An investigation of the theory and practice of various types of economic systems. The course begins with an examination and evaluation of the capitalistic system and is followed by an analysis of alternative types of economic systems such as fascism, socialism, and communism. (Gruchy.)

*Econ. 132. Advanced Economic Principles. (3)*

First and second semesters. Prerequisite, Econ. 32. Required for economics majors. This course is an analysis of price and distribution theory with special attention to recent developments in the theory of imperfect competition. (Grayson.)

*Econ. 134. Contemporary Economic Thought. (3)*

First semester. Prerequisites, Econ. 32 and senior standing. Graduate students should take Econ. 232. A survey of recent trends in American, English, and continental economic thought with special attention to the work of such economists as W. C. Mitchell, J. R. Commons, T. Veblen, W. Sombart, J. A. Hobson and other contributors to the development of economic thought since 1900. (Gruchy.)

*Econ. 136. International Economic Policies and Relations. (3)*

First semester. Prerequisite, Econ. 32 or 37. A descriptive and theoretical analysis of international trade. Full consideration is given to contemporary problems facing international trade and to the impact of governmental policy upon international commercial relations. (deBeers.)

*Econ. 137. The Economics of National Planning. (3)*

Second semester. Prerequisite, Econ. 32 or 37 and senior standing. Graduate students should take Econ. 233. An analysis of the principles and practice of economic planning with special reference to the planning problems of Great Britain, Russia, and the United States. (Gruchy.)

*Econ. 138. Economics of the Soviet Union. (3)*

Second semester. Prerequisite, Econ. 32 or 37. An analysis of the organization, operating principles and performance of the Soviet economy with attention to the historical and ideological background, planning, resources, industry, agriculture, domestic and foreign trade, finance, labor, and the structure and growth of national income. (Dodge.)

*Econ. 140. Money and Banking. (3)*

First and second semesters. Prerequisite, Econ. 32 or 37. A study of the organization, functions, and operation of our monetary, credit, and banking system; the relation of commercial banking to the Federal Reserve System; the relation of money and credit to prices; domestic and foreign exchange and the impact of public policy upon banking and credit. (Glade, Hamberg, Shelby.)

*Econ. 141. Theory of Money, Credit, and Prices. (3)*

Second semester. Prerequisites, Econ. 32 and 140. A study of recent domestic and international monetary policies, their objectives and theoretical foundations. (Gurley.)

*Econ. 142. Public Finance and Taxation. (3)*

First and second semesters. Prerequisite, Econ. 32 or 37. A study of government fiscal policy with special emphasis upon sources of public revenue, the tax system, government budgets, and the public debt. (Grayson.)

*Econ. 147. Business Cycles. (3)*

First semester. Prerequisite, Econ. 140. A study of the causes of depressions and unemployment, cyclical and secular instability, theories of business cycles, and the problem of controlling economic instability. (Shelby.)

*Econ. 149. International Finance and Exchange. (3)*

Second semester. Prerequisite, Econ. 140; Econ. 136 recommended. This course considers the theory and practice of international finance and exchange. The increased importance of public authority in foreign trade, international policies, and finance is given due emphasis. (deBeers.)

*Econ. 160. Labor Economics. (3)*

First and second semesters. Prerequisite, Econ. 32 or 37. The historical development and chief characteristics of the American labor movement are first surveyed. Present-day problems are then examined in detail: wage theories, unemployment, social security, labor organization, and collective bargaining. (Dalton, Measday, Smith.)

*Econ. 170. Monopoly and Competition. (3)*

Second semester. Prerequisite, Econ. 32 or 37. Changing structure of the American economy; price policies in different industrial classifications of monopoly and competition in relation to problems of public policy. (Smith.)

*Econ. 171. Economics of American Industries. (3)*

Second semester. Prerequisite, Econ. 32 or 37. A study of the technology, economics and geography of twenty representative American industries. (Clemens.)

*For Graduates*

*Econ. 200. Micro-Economic Analysis. (3)*

First semester. Prerequisite, Econ. 132. Price, output, and distribution analysis as developed by Chamberlin, Triffin, Hicks and others. Considerable attention is given to contributions in periodicals. (Grayson.)

*Econ. 201. Advanced Micro-Economic Analysis. (3)*

Second semester. Prerequisite, Econ. 200 or consent of instructor. A review and critical analysis of resource allocation and the theory of the firm, including recent developments in linear programming, activity analysis, and input-output analysis.

*Econ. 202. Macro-Economic Analysis. (3)*

Second semester. Prerequisite, Econ. 102 or equivalent. National income accounting; determination of national income and employment especially as related to the modern theory of effective demand; consumption function; multiplier and acceleration principles; the role of money as it affects output and employment as a whole; cyclical fluctuations. (Dillard.)

*Econ. 204. Origins and Development of Capitalism. (3)*

Study of the transition from feudalism to capitalism and the subsequent development of leading capitalist institutions in industry, agriculture, commerce, banking, and the social movement.

*Econ. 205. Economic Development of Underdeveloped Areas. (3)*

Principles and problems of economic development in underdeveloped areas; policies and techniques which hasten economic development. (Johnson.)

*Econ. 206. Seminar in Economic Development. (3)*

Prerequisite, Econ. 205 or consent of instructor. Problems and policies of economic development in specified underdeveloped areas. (Johnson.)



*Econ. 230. History of Economic Thought. (3)*

First semester. Prerequisite, Econ. 132 or consent of instructor. A study of the development of economic thought and theories including the Greeks, Romans, canonists, mercantilists, physiocrats, Adam Smith, Malthus, Ricardo. Relation of ideas to economic policy. (Dillard.)

*Econ. 231. Economic Theory in the Nineteenth Century. (3)*

Second semester. Prerequisite, Econ. 230 or consent of the instructor. A study of various nineteenth and twentieth century schools of economic thought, particularly the classicists, neo-classicists, Austrians, German historical school, American economic thought and the socialists. (Dillard.)

*Econ. 232, 233. Seminar in Institutional Economic Theory. (3, 3)*

First and second semesters. A study of recent developments in the field of institutional economic theory in the United States and abroad. (Gruchy.)

*Econ. 234. Economic Growth in Mature Economies. (3)*

Given in sequence with Econ. 232 and 233. Analysis of policies and problems for achieving stable economic growth in mature economies such as the United States, the United Kingdom, and the Scandinavian countries. (Gruchy.)

*Econ. 236. Seminar in International Economic Relations. (3)*

(Arranged.) A study of selected problems in International Economic Relations. (deBeers.)

*Econ. 237. Special Seminar in Economic Growth and Development. (3)*

Visiting academic and government economists who are specialists in various aspects of economic growth and development will address the seminar on special topics. Students may enroll for credit and write papers under the supervision of the faculty member directing the seminar.

*Econ. 238. Seminar in Economic Development of the Soviet Union. (3)*

Prerequisite, Econ. 138 or consent of instructor. Measurement and evaluations of Soviet economic development including interpretation and use of Soviet statistics, measurement of national income and rates of growth, fiscal and monetary policies, investment policies and technological change, planning and economic administration, manpower and wage policies, foreign trade and foreign aid policies, intra-Bloc relations, and selected topics in Bloc development.

*Econ. 240. Seminar in Monetary Theory and Policy. (3)*

Theories of money, prices, and national income with emphasis on recent developments. Monetary theories of income fluctuations. Domestic and international monetary policies. (Gurley.)

*Econ. 242. Public Finance and Fiscal Policy. (3)*

Prerequisite, Econ. 142 or consent of instructor. Taxation, public expenditures, and public debt; the use of fiscal policy as a stabilization device against inflation and recession.

*Econ. 247. Economic Growth and Instability. (3)*

Second semester. An analytical study of long-term economic growth in relation to

short-term cyclical instability. Attention is concentrated on the connection between accumulation of capital and the capital requirements of secular growth and business cycles. Earlier writings as well as recent growth models are considered. (Hamberg.)

*Econ. 248. The Economics of Technical Change. (3)*

Second semester. Prerequisite, consent of instructor. A study of the determinants and impact of inventions and innovations. Attention is given to the qualitative and quantitative aspects of technical change, both at the micro-economic and macro-economic levels, and under different conditions of economic development. (Hamberg.)

*Econ. 270. Seminar in Economics and Geography of American Industries. (3)*  
(Arranged.) (Clemens.)

*Econ. 399. Thesis.*  
(Arranged.)

## GEOGRAPHY

*Professors:* VAN ROYEN AND HU.

*Consulting Professor:* ROTERUS.

*Lecturers with rank of Professor:* LEMONS AND MC BRYDE.

*Lecturer:* VAN BERGEN VAN DER GRIJP.

*Associate Professor:* AUGELLI.

*Assistant Professors:* AHNERT, CURRY, DESHLER, HOOSON AND MC ARTHUR.

*Research Associate:* SYME.

*Research Assistants:* BLENK AND GROVES.

*Geog. 1, 2. Economic Resources. (2, 2)*

First and second semesters. One lecture and one two-hour laboratory period a week for Geog. 1; two lecture periods for Geog. 2. Freshman requirements in the business administration curriculums. General comparative study of the geographic factors underlying production economics. Emphasis upon climate, soils, land forms, agricultural products, power resources, and major minerals, concluding with brief survey of geography of commerce and manufacturing. (Deshler, Staff.)

*Geog. 10, 11. General Geography. (3, 3)*

First and second semesters. Required of all majors in geography; recommended for all minors; Geog. 10 is suggested for students of Arts and Sciences, Education and others who may desire a background in geography and its application to problems of their respective fields. Introduction to geography as a field of study. A survey of the content, philosophy, techniques, and application of geography and its significance for the understanding of world problems. (Augelli.)

*Geog. 20, 21. Economic Geography. (3, 3)*  
(Not offered on College Park campus.)

*Geog. 30. Principles of Morphology. (3)*

First semester. A study of the physical features of the earth's surface and their geographic distribution, including subordinate land forms. Major morphological processes, the development of land forms, and the relationships between various types of land forms and land use problems. (Ahnert.)

*Geog. 35. Map Interpretation and Map Problems. (3)*

First and second semesters. Interpretation of landforms and man-made features on American and foreign maps. Functions, use, and limitations of various types of maps, with emphasis upon topographic maps. Problems of use and interpretation. (Ahnert.)

*Geog. 40. Principles of Meteorology. (3)*

First and second semesters. An introductory study of the weather. Properties and conditions of the atmosphere, and methods of measurement. The atmospheric circulation and conditions responsible for various types of weather and their geographic distribution patterns. Practical applications. (Curry, Ahnert.)

*Geog. 41. Introductory Climatology. (3)*

Second semester. Prerequisite, Geog. 40, or permission of the instructor. Climatic elements and their controls, the classification and distribution of world climates and relevance of climatic differences to human activities. (Curry.)

*Geog. 42S. Weather and Climate. (2)*

Summer only. An introduction to the principal causes of the weather and the major types of climate, with special emphasis upon North America.

*For Advanced Undergraduates and Graduates*

*Geog. 100. Regional Geography of Eastern Anglo-America. (3)*

Second semester. Prerequisite, Geog. 1, 2 or Geog. 10, or permission of the instructor. A study of the cultural and economic geography and the geographic regions of eastern United States and Canada, including an analysis of the significance of the physical basis for present-day diversification of development, and the historical geographic background. (McArthur.)

*Geog. 101. Regional Geography of Western Anglo-America. (3)*

Second semester. Prerequisite, Geog. 1, 2 or Geog. 10, or permission of the instructor. A study of western United States, western Canada and Alaska along the lines mentioned under Geog. 100. (McArthur.)

*Geog. 102S. Geography of the United States. (2)*

Summer only. Permission of instructor. A general study of the regions and resources of the United States in relation to agricultural and industrial development and to present-day national problems.

*Geog. 103. Geographic Concepts and Source Materials. (3)*

First semester. A comprehensive and systematic survey of geographic concepts designed exclusively for teachers. Stress will be placed upon the philosophy of geography in relation to the social and physical sciences, the use of the primary tools of geography, source materials, and the problems of presenting geographic principles.

*Geog. 104. Geography of Major World Regions. (3)*

Second semester. A geographic analysis of the patterns, problems, and prospects of the world's principal human-geographic regions, including Europe, Anglo-America, the Soviet Union, the Far East, and Latin America. Emphasis upon the causal factors of differentiation and the role geographic differences play in the interpretation of the current world scene. This course is designed especially for teachers.

*Geog. 105. Geography of Maryland and Adjacent Areas. (3)*

First and second semesters. Prerequisite, permission of the instructor. An analysis of the physical environment, natural resources, and population in relation to agriculture, industry, transport, and trade in the state of Maryland and adjacent areas.

*Geog. 106S. Geography of Maryland. (2)*

Summer only. Permission of instructor. The geographic regions of Maryland and their principal characteristics, especially in relation to the development of home studies and other projects.

*Geog. 110. Economic and Cultural Geography of Caribbean America. (3)*

First semester. An analysis of the physical framework, broad economic and historical trends, cultural patterns, and regional diversification of Mexico, Central America, the West Indies, and parts of Columbia and Venezuela. (Augelli.)

*Geog. 111. Economic and Cultural Geography of South America. (3)*

First semester. A survey of natural environment and resources, economic development and cultural diversity of the South American republics, with emphasis upon problems and prospects of the countries. (Augelli.)

*Geog. 120. Economic Geography of Europe. (3)*

First semester. The natural resources of Europe in relation to agricultural and industrial development and to present-day economic and national problems. (Hooson, Van Royen.)

*Geog. 122. Economic Resources and Development of Africa. (3)*

Second semester. The natural resources of Africa in relation to agricultural and mineral production; the various stages of economic development and the potentialities of the future. (Deshler.)

*Geog. 123. Problems of Colonial Geography. (3)*

First and second semesters. Problems of development of colonial areas, with special emphasis upon the development of tropical regions and the possibilities of white settlement in the tropics.

*Geog. 130, 131. Economic and Political Geography of Southern and Eastern Asia. (3, 3)*

First and second semesters. A study of China, Japan, India, Burma, Indo-China, and the East Indies; natural resources, population, and economic activities. Comparisons of physical and human potentialities of major regions and of their economic, social and political development. (Hu.)

*Geog. 134, 135. Cultural Geography of East Asia. (3, 3)*

First and second semesters. A comprehensive and systematic survey of the geographical distribution and interpretation of the major racial groups and cultural patterns of China, Japan, and Korea. Special emphasis will be placed on the unique characteristics of the peoples of these areas, their basic cultural institutions, outlooks on life, contemporary problems, and trends of cultural change. Designed especially for students of the social sciences, and those preparing for careers in foreign service, foreign trade, education, and international relations. (Hu.)



*Geog. 140. Soviet Lands. (3)*

First and second semesters. The natural environment and its regional diversity. Geographic factors in the expansion of the Russian state. The geography of agricultural and industrial production, in relation to available resources, transportation problems, and diversity of population. (Hooson.)

*Geog. 146. The Near East. (3)*

First semester or second semester. The physical, economic, political, and strategic geography of the lands between the Mediterranean and India.

*Geog. 150. History and Theory of Cartography. (3)*

First semester. The development of maps throughout history. Geographical orientation, coordinates, and map scales. Map projections, their nature, use and limitations. Principles of representation of features on physical and cultural maps. Modern uses of maps and relationships between characteristics of maps and use types.

(van Bergen van der Grijp.)

*Geog. 151, 152. Cartography and Graphics Practicum. (3, 3)*

First and second semesters. One hour lecture and two two-hour laboratory periods a week. Techniques and problems of compilation, design, and construction of various types of maps and graphs. Relationships between map making and modern methods of production and reproduction. Trips to representative plants. Laboratory work directed toward cartographic problems encountered in the making of non-topographic maps.

*Geog. 153. Problems of Cartographic Representation and Procedure. (3)*

First and second semesters. Two hours lecture and two hours laboratory a week. Study of cartographic compilation methods. Principles and problems of symbolization, classification, and representation of map data. Problems of representation of features at different scales and for different purposes. Place-name selection and lettering; stick-up and map composition.

(van Bergen van der Grijp.)

*Geog. 154. Problems of Map Evaluation. (3)*

First or second semester. Two hours lecture and two hours laboratory a week. Schools of topographic concepts and practices. Theoretical and practical means of determining map reliability, map utility, and source materials. Nature, status, and problems of topographic mapping in different parts of the world. Non-topographic special use maps. Criteria of usefulness for purposes concerned and of reliability.

*Geog. 155. Problems and Practices of Photo Interpretation. (3)*

First and second semesters. Two hours of lecture and two hours of laboratory per week. Interpretation of aerial photographs with emphasis on the recognition of land-forms of different types and man-made features. Study of vegetation, soil, and other data that may be derived from aerial photographs. Types of aerial photographs and limitations of photo interpretation.

(Ahnert.)

*Geog. 160. Advanced Economic Geography I. Agricultural Resources. (3)*

First semester. Prerequisite, Geog. 1 and 2 or Geog. 10. The nature of agricultural resources, the major types of agricultural exploitation in the world, and the geographic distribution of certain major crops and animals in relation to the physical environment and economic geographic conditions. Main problems of conservation. (Van Royen.)



## Geography

### *Geog. 161. Advanced Economic Geography II. Mineral Resources. (3)*

Second semester. Prerequisite, Geog. 1 and 2, or Geog. 10. The nature and geographic distribution of the principal power, metallic and other minerals. Economic geographic aspects of modes of exploitation. Consequences of geographic distribution and problems of conservation. (Van Royen.)

### *Geog. 170. Local Field Course. (3)*

First semester. Training in geographic field methods and techniques. Field observation of land use in selected rural and urban areas in eastern Maryland. One lecture per week with Saturday and occasional weekend field trips. Primarily for undergraduates. (Ahnert.)

### *Geog. 180. History, Nature and Methodology of Geography. (3)*

First semester. A comprehensive and systematic study of the history, nature, and basic principles of geography, with special reference to the major schools of geographic thought; a critical evaluation of some of the important geographical works and methods of geographic research. (Hu.)

### *Geog. 190. Political Geography. (3)*

Second semester. Geographical factors in national power and international relations; an analysis of the role of "geopolitics" and "geostrategy," with special reference to the current world scene. (Augelli.)

### *Geog. 195. Geography of Transportation. (3)*

Second semester. The distribution of transport routes on the earth's surface; patterns of transport routes; the adjustment of transport routes and media to conditions of the natural environment centers and their distribution. (McArthur.)

### *Geog. 197. Urban Geography. (3)*

First semester. Origins of cities, followed by a study of elements of site and location with reference to cities. The patterns and functions of some major world cities will be analyzed. Theories of land use differentiation within cities will be appraised. (McArthur.)

### *Geog. 199. Topical Investigations. (1-3)*

First and second semesters. Independent study under individual guidance. Choice of subject matter requires joint approval of adviser and Head of the Department of Geography. Restricted to advanced undergraduate students with credit for at least 24 hours of geography. (Staff.)

## For Graduates

### *Geog. 200. Field Course. (3)*

Field work in September, conferences and reports during first semester. Practical experience in conducting geographic field studies. Intensive training in field methods and techniques and in the preparation of reports. For graduate students in geography. Open to other students by special permission of the Head of the Department of Geography. (Staff.)

### *Geog. 210, 211. Seminar in the Geography of Latin America. (3, 3)*

First and second semesters. Prerequisite, Geog. 110, 111 or consent of instructor. An analysis of recent changes and trends in industrial development, exploitation of mineral resources, and land utilization. (McBryde, Augelli.)

*Geog. 220, 221. Seminar in the Geography of Europe and Africa. (3, 3)*

First and second semesters. Prerequisite, Geog. 120 or 122, or consent of instructor. Analysis of special problems concerning the resources and development of Europe and Africa. (Van Royen, Deshler.)

*Geog. 230, 231. Seminar in the Geography of East Asia. (3, 3)*

First and second semesters. Analysis of problems concerning the geography of East Asia with emphasis on special research methods and techniques applicable to the problems of this area. (Hu.)

*Geog. 240, 241. Seminar in the Geography of the U.S.S.R. (3, 3)*

First and second semesters. Investigation of special aspects of Soviet geography. Emphasis on the use of Soviet materials. Prerequisite, reading knowledge of Russian and Geog. 140, or consent of instructor. (Hooson.)

*Geog. 246. Seminar in the Geography of the Near East. (3)*

First and second semesters.

*Geog. 250. Seminar in Cartography. (Credit arranged)*

First and second semesters. The historical and mathematical background of cartographic concepts, practices, and problems, and the various philosophical and practical approaches to cartography. Discussions will be supplemented by the presentation of specific cartographic problems investigated by the students.

(McBryde, van Bergen van der Grijp.)

*Geog. 260. Advanced General Climatology. (3)*

First semester. Prerequisite, Geog. 41, or consent of instructor. Advanced study of elements and controls of the earth's climates. Principles of climatic classification. Special analysis of certain climatic types. (Lemons.)

*Geog. 261. Applied Climatology. (3)*

Second semester. Prerequisite, Geog. 41, or consent of instructor. Study of principles, techniques, and data of micro-climatology, physical and regional climatology relating to such problems and fields as transportation, agriculture, industry, urban planning, human comfort, and regional geographic analysis. (Lemons.)

*Geog. 262, 263. Seminar in Meteorology and Climatology. (3, 3)*

First and second semesters. Prerequisite, consent of instructor. Selected topics in meteorology and climatology chosen to fit the individual needs of advanced students. (Lemons.)

*Geog. 280. Geomorphology. (3)*

Second semester. An advanced comparative study of selected geomorphic processes and land forms; theories of land forms evolution and geomorphological problems.

(Van Royen.)

*Geog. 290, 291. Selected Topics in Geography. (1-3)*

First and second semesters. Readings and discussion on selected topics in the field of geography. To be taken only with joint consent of adviser and Head of the Department of Geography. (Staff.)

*Geog. 399. Dissertation Research. (Credit to be arranged)*

First and second semesters and summer.

(Staff.)

## GOVERNMENT AND POLITICS

*Professors:* PLISCHKE, BURDETTE, STEINMEYER AND WENGERT.

*Associate Professors:* ANDERSON, HARRISON AND HATHORN.

*Assistant Professor:* ALFORD.

*Instructors:* ALPERIN, BYRD, DAWSON, HAMILTON AND LEE.

*Lecturers:* LARSON AND BEALS.

### *G. & P. 1. American Government. (3)*

Each semester. This course is designed as the basic course in government for the American Civilization Program, and it or its equivalent is a prerequisite to all other courses in the Department. It is a comprehensive study of governments in the United States—national, state, and local.

### *G. & P. 3. Principles of Government and Politics. (3)*

Each semester. A study of the basic principles and concepts of political science.

### *G. & P. 4. State Government and Administration. (3)*

Each semester. Prerequisite, G. & P. 1. A study of the organization and functions of state government in the United States, with special emphasis upon the government of Maryland.

### *G. & P. 5. Local Government and Administration. (3)*

Each semester. Prerequisite, G. & P. 1. A study of the organization and functions of local government in the United States, with special emphasis upon the government of Maryland cities and counties.

### *G. & P. 7. The Government of the British Commonwealth. (2)*

First semester. Prerequisite, G. & P. 1. A study of the governments of the United Kingdom and the British Dominions.

### *G. & P. 8. The Governments of Continental Europe. (2)*

Second semester. Prerequisite, G. & P. 1. A comparative study of the governments of France, Switzerland, Italy, Germany, and the Scandinavian countries.

### *G. & P. 9. The Governments of Latin America. (2)*

First semester. Prerequisite, G. & P. 1. A comparative study of Latin American governments, with special emphasis on Argentina, Brazil, Chile, and Mexico.

### *G. & P. 10. The Government of the Far East. (2)*

Second semester. Prerequisite, G. & P. 1. A study of the governments of China and Japan.

### *G. & P. 97. Major Foreign Governments. (3)*

Prerequisite, G. & P. 1. An examination of characteristic governmental institutions and political processes in selected major powers, such as Britain, Russia, France, Germany, Italy, Japan, and China. Students may not receive credit in this course and also obtain credit in G. & P. 7, 8, or 10.

*For Advanced Undergraduates and Graduates*

*G. & P. 101. International Political Relations. (3)*

Each semester. Prerequisite, G. & P. 1. A study of the major factors underlying international relations, the influence of geography, climate, nationalism, and imperialism, and the development of foreign policies of the major powers.

*G. & P. 102. International Law. (3)*

Second semester. Prerequisite, G. & P. 1. Fundamental principles governing the relation of states, including matters of jurisdiction over landed territory, water, airspace, and persons; treatment of aliens; treaty-making; diplomacy; and the laws of war and neutrality.

*G. & P. 104. Inter-American Relations. (3)*

Prerequisite, G. & P. 1. An analytical and historical study of the Latin-American policies of the United States and of problems in our relations with individual countries, with emphasis on recent developments.

*G. & P. 105. Recent Far Eastern Politics. (3)*

Each semester. Prerequisite, G. & P. 1. The background and interpretation of recent political events in the Far East and their influence on world politics.

*G. & P. 106. American Foreign Relations. (3)*

First semester. Prerequisite, G. & P. 1. The principles and machinery of the conduct of American foreign relations, with emphasis on the Department of State and the Foreign Service, and an analysis of the major foreign policies of the United States.

*G. & P. 108. International Organization. (3)*

Second semester. Prerequisite, G. & P. 1. A study of the objectives, structure, functions, and procedures of international organizations, including the United Nations and such functional and regional organizations as the Organization of American States.

*G. & P. 110. Principles of Public Administration. (3)*

First semester. Prerequisite, G. & P. 1. A study of public administration in the United States, giving special attention to the principles of organization and management and to fiscal, personnel, planning, and public relations practices.

*G. & P. 111. Public Personnel Administration. (3)*

First semester. Prerequisite, G. & P. 110 or B.A. 160. A survey of public personnel administration, including the development of merit civil service, the personnel agency, classification, recruitment, examination techniques, promotion, service ratings, training, discipline, employee relations, and retirement.

*G. & P. 112. Public Financial Administration. (3)*

Second semester. Prerequisite, G. & P. 110 or Econ. 142. A survey of governmental financial procedures, including processes of current and capital budgeting, the administration of public borrowing, the techniques of public purchasing, and the machinery of control through pre-audit and post-audit.

*G. & P. 124. Legislatures and Legislation. (3)*

Second semester. Prerequisite, G. & P. 1. A comprehensive study of legislative organi-



zation, procedure, and problems. The course includes opportunities for student contact with Congress and with the Legislature of Maryland.

*G. & P. 131, 132. Constitutional Law. (3, 3)*

First and second semesters. Prerequisite, G. & P. 1. A systematic inquiry into the general principles of the American constitutional system, with special reference to the role of the judiciary in the interpretation and enforcement of the federal constitution; the position of the states in the federal system; state and federal powers over commerce; due process of law and other civil rights.

*G. & P. 133. Administration of Justice. (3)*

Second semester. Prerequisite, G. & P. 1. An examination of civil and criminal court structure and procedures in the United States at all levels of government, with special emphasis upon the federal judiciary.

*G. & P. 141. History of Political Theory. (3)*

First semester. Prerequisite, G. & P. 1. A survey of the principal political theories set forth in the works of writers from Plato to Bentham.

*G. & P. 142. Recent Political Theory. (3)*

Second semester. Prerequisite, G. & P. 1. A study of 19th and 20th century political thought, with special emphasis on recent theories of socialism, communism, and fascism.

*G. & P. 144. American Political Theory. (3)*

First semester. Prerequisite, G. & P. 1. A study of the development and growth of American political concepts from the colonial period to the present.

*G. & P. 154. Problems of World Politics. (3)*

Each semester. Prerequisite, G. & P. 1. A study of governmental problems of international scope, such as causes of war, problems of neutrality, and propaganda. Students are required to report on readings from current literature.

*G. & P. 174. Political Parties. (3)*

First semester. Prerequisite, G. & P. 1. A descriptive and analytical examination of American political parties, nominations, elections, and political leadership.

*G. & P. 178. Public Opinion. (3)*

Each semester. Prerequisite, G. & P. 1. An examination of public opinion and its effect on political action, with emphasis on opinion formation and measurement, propaganda, and pressure groups.

*G. & P. 181. Administrative Law. (3)*

Second semester. Prerequisite, G. & P. 1. A study of the discretion exercised by administrative agencies, including analysis of their functions, their powers over persons and property, their procedures, and judicial sanctions and controls.

*G. & P. 191. The Government and Administration of the Soviet Union. (3)*

First semester. Prerequisite, G. & P. 1. A study of the adoption of the communist philosophy by the Soviet Union, of its governmental structure, and of the administration of government policy in the Soviet Union.



G. & P. 197. *Comparative Governmental Institutions*. (3)

Second semester. Prerequisite, G. & P. 1. A study of major political institutions, such as legislatures, executives, courts, administrative systems, and political parties, in selected foreign governments.

*For Graduates*

G. & P. 201. *Seminar in International Political Organization*. (3)

A study of the forms and functions of various international organizations.

G. & P. 202. *Seminar in International Law*. (3)

Reports on selected topics assigned for individual study and reading in substantive and procedural international law.

G. & P. 205. *Seminar in American Political Institutions*. (3)

Reports on topics assigned for individual study and reading in the background and development of American government.

G. & P. 206. *Seminar in American Foreign Relations*. (3)

Reports on selected topics assigned for individual study and reading in American foreign policy and the conduct of American foreign relations.

G. & P. 207. *Seminar in Comparative Governmental Institutions*. (3)

Reports on selected topics assigned for individual study and reading in governmental and political institutions in governments throughout the world.

G. & P. 211. *Seminar in Federal-State Relations*. (3)

Reports on topics assigned for individual study and reading in the field of recent federal-state relations.

G. & P. 213. *Problems of Public Administration*. (3)

Reports on topics assigned for individual study and reading in the field of public administration.

G. & P. 214. *Problems of Public Personnel Administration*. (3)

Reports on topics assigned for individual study and reading in the field of public personnel administration.

G. & P. 215. *Problems of State and Local Government in Maryland*. (3)

Reports on topics assigned for individual study in the field of Maryland state and local government.

G. & P. 216. *Government Administrative Planning and Management*. (3)

Reports on topics assigned for individual study and reading in administrative planning and management in government.

G. & P. 217. *Government Corporations and Special Purpose Authorities*. (3)

Reports on topics assigned for individual study and reading in the use of the corporate form for governmental administration. The topics for study will relate to the use of the corporate form as an administrative technique, as in the cases of the Tennessee Valley Authority, the Port of New York Authority, and local housing authorities.

## *Government and Politics*

### *G. & P. 221. Seminar in Public Opinion. (3)*

Reports on topics assigned for individual study and reading in the field of public opinion.

### *G. & P. 223. Seminar in Legislatures and Legislation. (3)*

Reports on topics assigned for individual study and reading about the composition and organization of legislatures and about the legislative process.

### *G. & P. 224. Seminar in Political Parties and Politics. (3)*

Reports on topics assigned for individual study and reading in the fields of political organization and action.

### *G. & P. 225. Man and the State. (3)*

Individual reading and reports on such recurring concepts in political theory as liberty, equality, justice, natural law and natural rights, private property, sovereignty, nationalism, and the organic state.

### *G. & P. 231. Seminar in Public Law. (3)*

Reports on topics assigned for individual study and reading in the fields of constitutional and administrative law.

### *G. & P. 251. Bibliography of Government and Politics. (3)*

Survey of the literature of the various fields of government and politics and instruction in the use of government documents.

### *G. & P. 252. Problems of Democracy: National I. (3)*

Summer session only.

### *G. & P. 253. Problems of Democracy: International I. (3)*

Summer session only.

### *G. & P. 254. Problems of Democracy: National II. (3)*

Summer session only.

### *G. & P. 255. Problems of Democracy: International II. (3)*

Summer session only.

### *G. & P. 261. Problems of Government and Politics. (3)*

Credit according to work accomplished.

### *G. & P. 281. Departmental Seminar. (No credit)*

Topics as selected by the graduate staff of the Department. Registration for two semesters required of all doctoral candidates. Conducted by the entire Departmental staff in full meeting.

### *G. & P. 399. Thesis Research.*

(Arranged).

# JOURNALISM AND PUBLIC RELATIONS

*Professor:* CROWELL.

*Associate Professors:* KRIMEL AND NEWSOM.

*Assistant Professor:* BRYAN.

*Instructor:* SEVERIN.

## JOURNALISM COURSES

### *Journ. 10. Introduction to Journalism. (3)*

Two lectures, two laboratory hours each week. Prerequisites, at least average grade of "C" in Eng. 1 and 2. Laboratory fee, \$3.00. Survey of journalism. Laboratory time spent in writing news-story exercises assigned by instructor. "B" in Journ. 10 or 11 is prerequisite, for majors in this Department, to all upper-division courses in the Department.

### *Journ. 11. News Reporting. (3)*

Each semester. Two lectures, two laboratory hours each week. Prerequisite, Journ. 10. Laboratory fee, \$3.00. More specialized types of news stories.

### *Journ. 101. Radio News Reporting. (2)*

Second semester. One lecture and two laboratory hours each week. Prerequisite, Sp. 22. Laboratory fee, \$3.00. Theory and practice in radio news reporting.

### *Journ. 160. News Editing I. (3)*

Each semester. Two lectures, two hours of laboratory each week. Laboratory fee, \$3.00. Copy editing, proofreading, headline writing.

### *Journ. 161. News Editing II. (3)*

Second semester. Two lectures, three hours of laboratory work on *Baltimore Sun* or *Baltimore News-Post* desk each week, arranged. Headwriting, makeup, rewriting, copy editing.

### *Journ. 162. Community Journalism. (3)*

Each semester. One lecture, four hours of laboratory work on a weekly newspaper each week, arranged. Introduction to community and weekly newspaper.

### *Journ. 163. Newspaper Typography. (3)*

First semester. Introduction to newspaper typography, practice in laying out and making up advertisements and newspaper pages.

### *Journ. 165. Feature Writing. (3)*

Each semester. Writing and selling of newspaper and magazine articles.

### *Journ. 173. Scholastic Journalism. (2)*

Summer. Introduction to theory and practice in production of high school and junior high publications.

### *Journ. 174. Editorial Writing. (2)*

Second semester. Theory and practice in editorial writing.

## *Journalism and Public Relations*

### *Journ. 175. Reporting of Public Affairs. (3)*

First semester. One lecture, four hours of laboratory time spent each week on regular beat for *Baltimore Sun* or *Baltimore News-Post*, by arrangement. Advanced reporting; city, county, federal beats.

### *Journ. 176. Newsroom Problems. (3)*

First semester. Three lectures per week. Ethics, newsroom problems and policies, freedom and responsibilities of the press.

### *Journ. 181. Press Photography. (3)*

First and second semesters. One lecture, four hours of laboratory each week. Prerequisite, junior major standing in the Department. Laboratory fee, \$6.00, provides demonstration supplies, maintenance. Shooting, developing, printing of news and feature pictures. Equipment provided by University. Student furnishes own supplies needed in course.

### *Journ. 182. Advanced Press Photography. (2)*

First semester. One lecture, two hours of laboratory per week. Prerequisite, Journ. 181 or equivalent. Advanced shooting, developing, printing of news and feature pictures. Equipment provided by University. Student furnishes own supplies needed in course.

### *Journ. 184. Picture Editing. (2)*

Second semester. Prerequisite, Journ. 181. Theories and exercises in handling pictures for the press.

### *Journ. 191. Law of the Press. (3)*

Second semester. Prerequisite, senior standing. Non-legal introduction to libel, right of privacy, fair comment and criticism, privilege, contempt by publication, Maryland press statutes.

### *Journ. 192. History of American Journalism. (3)*

First semester. Historical background of American journalism.

### *Journ. 196. Problems in Journalism. (2)*

Second semester. Group and individual projects in problems of journalism.

## PUBLIC RELATIONS COURSES

### *P. R. 166. Public Relations. (3)*

Each semester. Survey of public relations, general orientation, principles, techniques.

### *P. R. 170. Publicity Techniques. (3)*

Each semester. Prerequisite, P. R. 166. Strategy and techniques of publicity operations. Orientation, practice in use of major media of public communications.

### *P. R. 171. Industrial Journalism. (2)*

Second semester. Prerequisite for public relations majors, senior standing. Introduction to industrial communications, management and production of company publications, public relations aspects of industrial journalism.

*P. R. 186. Public Relations of Government. (3)*

Second semester. Prerequisite, P. R. 166. Study of public relations, publicity, propaganda, information services in public administration.

*P. R. 194. Public Relations Cases. (2)*

First semester. Prerequisite, P. R. 166. Study of cases in public relations, with particular attention to policy formulation, strategy, ethical factors.

*P. R. 195. Seminar in Public Relations. (2)*

Each semester. Group and individual research in public relations.

## OFFICE MANAGEMENT AND TECHNIQUES

*Professor: PATRICK.*

*Instructors: ANDERSON, BROWN, CARVER AND O'NEILL.*

*O. T. 1. Principles of Typewriting. (2)*

First and second semesters. Five periods per week. Prerequisite, consent of instructor. Laboratory fee, \$7.50. The goal of this course is the attainment of the ability to operate the typewriter continuously with reasonable speed and accuracy by the use of the "touch" system.

*O. T. 2. Intermediate Typewriting. (2)*

First and second semesters. Five periods per week. Prerequisite, minimum grade of "C" in O. T. 1 or consent of instructor. Laboratory fee, \$7.50. Drills for improving speed and accuracy and an introduction to office production typewriting. This course must be completed prior to enrollment in O. T. 16.

*O. T. 10. Office Typewriting Problems. (2)*

First and second semesters. Five periods per week. Prerequisite, minimum grade of "C" in O. T. 2 or consent of instructor. Laboratory fee, \$7.50. A course to develop the higher degree of accuracy and speed possible and to teach the advanced techniques of typewriting with special emphasis on production.

*O. T. 12, 13. Principles of Shorthand. (3, 3)*

Prerequisite, consent of instructor. Five periods per week. This course aims to develop the mastery of the principles of Gregg Shorthand. In O. T. 13 special emphasis is placed on developing dictation speed.

*O. T. 16, 18. Advanced Gregg Shorthand. (2, 2)*

Five periods per week. Prerequisite, minimum grade of "C" in O. T. 2 and O. T. 13 or consent of instructor. O. T. 17 and O. T. 19 must be taken concurrently with O. T. 16 and 18 respectively. Emphasis is placed on vocabulary development and new matter dictation for sustained speed at the highest level possible under varying conditions. O. T. 18 is a continuation of background knowledge and an intensive development of recording skills through office-style dictation and vocational dictation based on terminology used in various types of businesses.

*O. T. 17, 19. Problems in Gregg Transcription. (2, 2)*

Four periods per week. Prerequisite, minimum grade of "C" in O. T. 2 and



O. T. 13 or consent of instructor. Laboratory fee, per semester, \$7.50. O. T. 16 and 18 must be taken concurrently with O. T. 17 and O. T. 19 respectively. A course designed to build speed, accuracy and correct form in the transcription of shorthand notes. Transcription is under timed conditions with emphasis on production involving quantity and quality in the finished product. O. T. 19 is a continued integration of the knowledge and skills previously attained with particular emphasis on transcriptional problems.

*O. T. 110. Administrative Secretarial Procedures. (3)*

First semester. Prerequisite, O. T. 18 and 19 or consent of the instructor. The nature of office work; the secretary's function in communication, inter-company and public relations, handling records, supplies and equipment; and in direction of the office staff. Standardization and simplification of office forms and procedures in relation to correspondence, mailing, receiving callers, telephoning, handling conferences, and securing business information. Business etiquette and ethics.

*O. T. 114. Secretarial Office Practice. (3)*

First and second semesters. Six periods per week. Prerequisite, senior standing and completion of O. T. 110. The purpose of this course is to give laboratory and office experience to senior students. A minimum of 90 hours of office experience under supervision is required. In addition, each student will prepare a written report on an original problem previously approved.

# FACULTY

1960-1961

## COLLEGE OF

## BUSINESS AND PUBLIC ADMINISTRATION

### *Administrative Officers*

**J. FREEMAN PYLE**, *Professor of Marketing and Economics and Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

**JAMES H. REID**, *Professor of Marketing and Assistant Dean of the College of Business and Public Administration*

B.S., University of Iowa, 1923; M.A., American University, 1933.

### *Professors*

**FRANKLIN L. BURDETTE**, *Professor of Government and Politics, and Director of the Bureau of Governmental Research*

A.B., Marshall College, 1934; M.A., University of Nebraska, 1935; M.A., Princeton University, 1937; PH.D., 1938; LL.D., Marshall College, 1959.

**CHARLES E. CALHOUN**, *Professor of Finance*

A.B., University of Washington, 1925; M.B.A., 1930.

**ELI W. CLEMENS**, *Professor of Business Administration*

B.S., Virginia Polytechnic Institute, 1930; M.S., University of Illinois, 1934; PH.D., University of Wisconsin, 1940.

**J. ALLAN COOK**, *Professor of Marketing*

B.A., William and Mary, 1928; M.B.A., Harvard University, 1936; PH.D., Columbia University, 1947.

**JOHN H. COVER**, *Professor and Director of the Bureau of Business and Economic Research*

B.S., Columbia University, 1915; A.M., 1919; PH.D., 1927.

**ALFRED A. CROWELL**, *Professor and Head of the Department of Journalism and Public Relations*

A.B., University of Oklahoma, 1929; M.A., 1934; M.S.J., Northwestern University, 1940.

**DUDLEY DILLARD**, *Professor and Head of the Department of Economics*

B.S., University of California, 1935; PH.D., 1940.

**ALLAN J. FISHER**, *Professor of Accounting and Finance*

B.S., Wharton School of Finance and Commerce, 1928; LITT.M., University of Pittsburgh, 1936; PH.D., 1937.

## Faculty

JOHN H. FREDERICK, *Professor and Head of the Department of Business Organization*

B.S., Wharton School of Finance and Commerce, 1918; M.A., University of Pennsylvania, 1925; PH.D., 1927.

DWIGHT L. GENTRY, *Professor of Marketing*

A.B., Elon College, 1941; M.B.A., Northwestern University, 1947; PH.D., University of Illinois, 1952.

ALLAN G. GRUCHY, *Professor of Economics*

B.A., University of British Columbia, 1926; M.A., McGill University, 1928; PH.D., University of Virginia, 1931.

DANIEL HAMBERG, *Professor of Economics*

B.S., University of Pennsylvania, 1945; M.A., 1947; PH.D., 1952.

CHARLES Y. HU, *Professor of Geography*

B.S., University of Nanking, China, 1930; M.A., University of California, 1936; PH.D., University of Chicago, 1941.

ARTHUR S. PATRICK, *Professor of Office Management and Business Education*

B.S., Wisconsin State College, 1931; M.A., University of Iowa, 1940; PH.D., American University, 1956.

ELMER PLISCHKE, *Professor and Head of the Department of Government and Politics*

PH.B., Marquette University, 1937; M.A., American University, 1938; PH.D., Clark University, 1943.

REUBEN G. STEINMEYER, *Professor of Government and Politics*

A.B., American University, 1929; PH.D., 1935.

CHARLES T. SWEENEY, *Professor of Accounting*

B.S., Cornell University, 1921; M.B.A., University of Michigan, 1928; C.P.A., Iowa, 1934; Ohio, 1936.

HAROLD F. SYLVESTER, *Professor of Personnel Administration*

PH.D., The Johns Hopkins University, 1938.

CHARLES A. TAFF, *Professor of Transportation*

B.S., University of Iowa, 1937; M.A., 1941; PH.D., University of Maryland, 1952.

WILLIAM VAN ROYEN, *Professor and Head of the Department of Geography*

M.A., Rijksuniversiteit Utrecht, 1925; PH.D., Clark University, 1928.

SIVERT M. WEDEBERG, *Professor of Accounting*

B.B.A., University of Washington, 1925; C.P.A., Maryland, 1934; A.M., Yale University, 1935.

NORMAN WENCERT, *Professor of Government and Politics*

B.A., University of Wisconsin, 1938; M.A., Fletcher School, 1939; LL.B., University of Wisconsin, 1942; PH.D., 1947.

**HOWARD W. WRIGHT, Professor of Accounting**

B.S., Temple University, 1937; M.A., University of Iowa, 1940; C.P.A., Texas, 1940;  
 PH.D., University of Iowa, 1947.

**Consulting Professor****VICTOR ROTERUS, Consulting Professor of Geography**

PH.B., University of Chicago, 1930; M.S., 1931.

**Associate Professors****THORNTON H. ANDERSON, Associate Professor of Government and Politics**

A.B., University of Kentucky, 1937; M.A., 1938; PH.D., University of Wisconsin,  
 1948.

**JOHN P. AUGELLI, Associate Professor of Geography**

B.A., Clark University, 1943; M.A., Harvard University, 1949; PH.D., 1951.

**JOHN H. CUMBERLAND, Associate Professor and Assistant Director of the Bureau of Business and Economic Research**

B.A., University of Maryland, 1947; M.A., Harvard University, 1949; PH.D., 1951.

**TOWNES L. DAWSON, Associate Professor of Business Law**

B.B.A., University of Texas, 1943; B.A., U. S. Merchant Marine Academy, 1946;  
 M.B.A., University of Texas, 1947; PH.D., 1950; LL.B., 1954.

**HENRY W. GRAYSON, Associate Professor of Economics**

B.A., University of Saskatchewan, 1937; M.A., University of Toronto, 1947; PH.D.,  
 1950.

**JOHN G. GURLEY, Associate Professor of Economics**

B.A., Stanford University, 1924; PH.D., 1951.

**HORACE V. HARRISON, Associate Professor of Government and Politics**

B.A., Trinity University, Texas, 1932; M.A., University of Texas, 1941; PH.D., 1951.

**GUY B. HATHORN, Associate Professor of Government and Politics**

B.A., University of Mississippi, 1940; M.A., 1942; PH.D., Duke University, 1950.

**DONALD W. KRIMEL, Associate Professor of Public Relations**

B.ED., Illinois State Teachers College, 1941; PH.M., University of Wisconsin, 1946;  
 PH.D., 1955.

**BOYD L. NELSON, Associate Professor of Statistics**

B.A., University of Wisconsin, 1947; M.A., 1948; PH.D., 1952.

**D. EARL NEWSOM, Associate Professor of Journalism**

B.S., Oklahoma State University, 1948; M.S.J., Northwestern University, 1949; ED.D.,  
 Oklahoma State University, 1957.

## Faculty

CLINTON SPIVEY, *Associate Professor of Industrial Management*  
B.S., University of Illinois, 1946; M.S., 1947; PH.D., 1957.

## Assistant Professors

FRANK O. AHNERT, *Assistant Professor of Geography*  
DR. PHIL., Heidelberg University, 1953.

ALBERT L. ALFORD, *Assistant Professor of Government and Politics*  
A.B., University of Akron, 1948; A.M., Princeton University, 1951; PH.D., 1953.

HENRY ANDERSON, *Assistant Professor of Statistics*  
B.A., University of London, 1939; M.B.A., Columbia University, 1948; PH.D., 1959.

ROY ASHMEN, *Assistant Professor of Marketing*  
B.S., Drexel Institute of Technology, 1935; M.S., Columbia University, 1936; PH.D., Northwestern University, 1950.

CARTER R. BRYAN, *Assistant Professor of Journalism*  
B.A., University of California, 1937; PH.D., University of Vienna, Austria, 1940.

JOHN A. DAIKER, *Assistant Professor of Accounting*  
B.S., University of Maryland, 1941; M.B.A., 1951; C.P.A., District of Columbia, 1949.

JOHN H. DALTON, *Assistant Professor of Economics*  
A.B., University of California, 1943; PH.D., 1955.

WALTER W. DESHLER, *Assistant Professor of Geography*  
B.S., Lafayette College, 1943; M.A., University of Maryland, 1952; PH.D., 1957.

CHARLES B. EDELSON, *Assistant Professor of Accounting*  
B.B.A., University of New Mexico, 1949; M.B.A., Indiana University, 1950; C.P.A., Maryland, 1951.

WILLIAM P. GLADE, JR., *Assistant Professor of Economics*  
B.B.A., University of Texas, 1950; M.A., 1951; PH.D., 1955.

DAVID J. M. HOOSON, *Assistant Professor of Geography*  
B.A., Oxford University, England, 1948; M.A., 1950; PH.D., London University, 1955.

LEROY L. LEE, *Assistant Professor of Accounting*  
A.B., George Washington University, 1948; A.M., George Washington University, 1952; C.P.A., Maryland, 1949.

NEIL M. MCARTHUR, *Assistant Professor of Geography*  
B.A., University of Western Ontario, 1948; M.A., 1950; PH.D., University of Michigan, 1955.

WALTER S. MEASDAY, *Assistant Professor of Economics*  
A.B., William and Mary, 1945; PH.D., Massachusetts Institute of Technology, 1955.

MAURICE E. O'DONNELL, *Assistant Director and Assistant Professor, Bureau of Governmental Research*  
B.S., Eastern Illinois State, 1948; M.S., University of Wisconsin, 1951; PH.D., 1954.



G. DONALD SHELBY, *Assistant Professor of Economics*  
B.A., University of Cincinnati, 1947; PH.D., University of California, 1955.

SPENCER M. SMITH, *Assistant Professor of Economics*  
B.A., University of Iowa, 1941; M.A., 1942; PH.D., 1948.

### *Instructors*

ROBERT J. ALPERIN, *Instructor in Government and Politics*  
B.A., University of Chicago, 1950; M.A., 1952; PH.D., Northwestern University, 1959.

ARTHUR T. ANDERSEN, *Instructor in Economics*  
B.A., City College of New York, 1954.

CHARLES R. ANDERSON, *Instructor in Office Management and Techniques*  
B.S., University of Maryland, 1957; M.ED., 1959.

CHARLES E. BARRETT, *Instructor in Economics*  
A.B., Loyola College, 1942; M.A., University of Maryland, 1950.

JAMES G. BROWN, *Instructor of Office Management and Techniques*  
B.A., George Washington University, 1948; M.A., 1949.

ELBERT M. BYRD, *Instructor in Government and Politics*  
B.S., American University, 1953; M.A., 1954; PH.D., 1959.

VIOLET M. CARVER, *Instructor of Office Techniques*  
B.S., State Teachers College, Indiana, Pa., 1955; M.ED., Pennsylvania State University, 1958.

EDWIN K. CLICKNER, *Instructor in Business Organization*  
B.S., American University, 1951; M.A., 1955.

EDWARD DAWSON, *Instructor in Government and Politics*  
B.A., University of California, (Berkeley), 1937.

ERNEST H. DAY, *Instructor in Economics*  
A.B., Oberlin College; LL.B., George Washington, 1950; M.A., 1955.

NORTON T. DODGE, *Instructor in Economics*  
A.B., Cornell University, 1948; M.A., Harvard University, 1951.

WILLIAM R. HAMILTON, JR., *Instructor in Government and Politics*  
B.A., University of Oklahoma, 1954; M.A., University of Maryland, 1956.

ROBERT A. HEINTZE, *Instructor in Industrial Management*  
B.A., George Washington University, 1953; M.B.A., Syracuse University, 1956.

CHARLES F. HEYE, *Instructor in Business Organization*  
B.B.A., University of Texas, 1943; M.B.A., University of Maryland, 1947.

ROBERT S. HIMES, *Instructor in Accounting*  
B.C.S., Benjamin Franklin University, 1939; M.C.S., 1940; B.S., American University, 1951; M.B.A., 1955.

OLIVER LEE, *Instructor in Government and Politics*  
B.A., Harvard University, 1951; M.A., University of Chicago, 1955.

## Faculty

JANE H. O'NEILL, *Instructor in Office Techniques*  
B.A., University of Maryland, 1932.

WERNER J. SEVERIN, *Instructor in Press Photography*  
B.A., University of Missouri, 1956; M.A., 1959.

JOHN W. WAGNER, *Instructor in Accounting*  
B.S., University of Maryland, 1956; C.P.A., Maryland, 1956.

WILMER A. WATROUS, *Instructor of Industrial Management*  
B.S., University of California, 1940; M.A., 1946.

## Lecturers

ALAN BEALS, *Lecturer in Government and Politics and Executive Secretary of the Maryland Municipal League*  
B.A., Colgate University, 1954; M.P.A., Syracuse University, 1955.

JOHN S. DE BEERS, *Lecturer in Economics*  
B.A., Cornell University, 1937; PH.D., University of Chicago, 1951.

DERK H. G. VAN BERGEN VAN DER GRIJP, *Lecturer in Geography (Cartography)*  
GRAD., Royal Military Academy of the Netherlands, 1927; GRAD., Photogrammetry, Delft Technical University, 1935; GRAD., Topographic Training Centre, N.E.I., 1938; Col. Neth. Army (Ret.)

EDGAR A. J. JOHNSON, *Lecturer in Economics*  
B.S., University of Illinois, 1922; M.A., Harvard University, 1924; PH.D., 1929.

HAROLD LARSON, *Lecturer in Government and Politics*  
B.A., Morningside College, 1927; M.A., Columbia University, 1928; PH.D., 1943.

HOYT LEMONS, *Lecturer in Geography*  
B.ED., Southern Illinois University, 1936; M.A., University of Nebraska, 1938; PH.D., 1941.

F. WEBSTER MCBRYDE, *Lecturer in Geography*  
B.A., Tulane University, 1930; PH.D., University of California, 1940.

MILTON B. MILLON, *Associate and Lecturer, and Director of the Municipal Technical Advisory Service, Bureau of Governmental Research*  
A.B., University of Maryland, 1950; M.A., University of Chicago, 1952.

HENRY W. MOORE, JR., *Lecturer in Economics*  
B.S., University of Maryland, 1942; M.A., Yale University, 1952.

JOHN L. TIERNEY, *Lecturer in Business Law*  
A.B., University of Minnesota, 1929; LL.B., University of Wisconsin, 1938; LL.M., George Washington, 1956.

*Research Associates*

EDMUND C. MESTER, *Research Associate, Bureau of Governmental Research*  
A.B., University of Maryland, 1948; M.A., 1949.

NORMAN DALE O'BANNON, *Research Associate, Bureau of Business and Economic Research*  
B.A., Texas A & M, 1957; M.A., University of Virginia, 1958.

*Faculty Members Teaching Abroad*

JOHN A. BOTTOMLEY, M.A.....*Instructor in Economics*  
BERNARD E. DUPUIS, M.A.....*Lecturer in Government and Politics*  
ROBERT Y. DURAND, M.B.A.....*Instructor in Business Administration*  
DAVID M. EARL, PH.D.....*Lecturer in Government and Politics*  
CHARLES HAMMOND, JR., PH.D.....*Lecturer in Economics*  
JOHN J. HEBAL, PH.D.....*Lecturer in Government and Politics*  
WALTER V. HOHENSTEIN, PH.D.....*Lecturer in Government and Politics*  
TERRY HOY, PH.D.....*Lecturer in Government and Politics*  
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THEODORE MCNELLY, PH.D.....*Lecturer in Government and Politics*  
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JANUS POPPE, PH.D.....*Lecturer in Economics*  
EUGENE S. POWELL, M.A.....*Lecturer in Government and Politics*  
DONALD E. TOTTEN, M.S.....*Instructor in Geography and Assistant to Director*  
JOHN W. WORTMAN, PH.D.....*Lecturer in Government and Politics*









COLLEGE  
of  
EDUCATION

Catalog Series 1960-1961



UNIVERSITY OF MARYLAND

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VOLUME 14

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NO. 3

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# UNIVERSITY CALENDAR

## FALL SEMESTER 1959

### JANUARY 1960

- 4 Monday—Christmas Recess Ends 8 a.m.
- 20 Wednesday—Pre-Examination Study Day
- 21-27 Thursday to Wednesday, inclusive—Fall Semester Examinations

## SPRING SEMESTER 1960

### FEBRUARY

- 1-5 Monday to Friday—Spring Semester Registration
- 8 Monday—Instruction Begins
- 22 Monday—Washington's Birthday Holiday

### MARCH

- 25 Friday—Maryland Day

### APRIL

- 14 Thursday—Easter Recess Begins After Last Class
- 19 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 18 Wednesday—Military Day
- 26 Thursday—Pre-Examination Study Day

- May 27- } Friday to Friday, inclusive—Spring Semester Examinations
- June 3 }
- 29 Sunday—Baccalaureate Exercises
- 30 Monday—Memorial Day, Holiday

### JUNE

- 4 Saturday—Commencement Exercises

## SUMMER SESSION 1960

### JUNE 1960

- 27 Monday—Summer Session Registration
- 28 Tuesday—Summer Session Begins

### AUGUST

- 5 Friday—Summer Session Ends

## SHORT COURSES 1960

### JUNE 1960

- 20-25 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 8-13 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 6-9 Tuesday to Friday—Firemen's Short Course



# UNIVERSITY CALENDAR

## FALL SEMESTER 1960

### SEPTEMBER

- 12-16 Monday to Friday—Fall Semester Registration
- 19 Monday—Instruction Begins

### NOVEMBER

- 23 Wednesday—Thanksgiving Recess Begins After Last Class
- 28 Monday—Thanksgiving Recess Ends 8 a.m.

### DECEMBER

- 20 Tuesday—Christmas Recess Begins

### JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day Holiday
- 25 Wednesday—Pre-Examination Study Day

- Jan. 26- } Thursday to Wednesday, inclusive—Fall Semester Examinations
- Feb. 1 }

## SPRING SEMESTER 1961

### FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday Holiday

### MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

### APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 17 Wednesday—Military Day
- 30 Tuesday—Memorial Day, Holiday

### JUNE

- 2 Friday—Pre-Examination Study Day
- 4 Sunday—Baccalaureate Exercises
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 10 Saturday—Commencement Exercises

## SUMMER SESSION 1961

### JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

### AUGUST

- 4 Friday—Summer Session Ends

## SHORT COURSES 1961

### JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 7-12 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

# BOARD OF REGENTS

## and

### MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK	
<i>Chairman</i> .....	1966
McCormick and Company, 414 Light Street, Baltimore 2	
EDWARD F. HOLTER	
<i>Vice-Chairman</i> .....	1968
The National Grange, 744 Jackson Place, N.W., Washington 6	
B. HERBERT BROWN	
<i>Secretary</i> .....	1960
The Baltimore Institute, 10 West Chase Street, Baltimore 1	
HARRY H. NUTTLE	
<i>Treasurer</i> .....	1966
Denton	
LOUIS L. KAPLAN	
<i>Assistant Secretary</i> .....	1961
5800 Park Heights Avenue, Baltimore 15	
ENOS S. STOCKBRIDGE	
<i>Assistant Treasurer</i> .....	1960
10 Light Street, Baltimore 2	
THOMAS W. PANGBORN .....	1965
The Pangborn Corporation, Pangborn Blvd., Hagerstown	
THOMAS B. SYMONS .....	1963
Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	
C. EWING TUTTLE .....	1962
907 Latrobe Building, Charles and Read Streets, Baltimore 2	
WILLIAM C. WALSH .....	1968
Liberty Trust Building, Cumberland	
MRS. JOHN L. WHITEHURST.....	1967
4101 Greenway, Baltimore 18	

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Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

## OFFICERS OF ADMINISTRATION

### *Principal Administrative Officers*

WILSON H. ELKINS, *President*

B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936;  
D. PHIL., 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBAKE, *Dean of the Faculty*

B.S., State Teachers College, California, Pa., 1934; M.A., Ohio State University, 1936;  
PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

### *Emeritus*

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

### *Administrative Officers of the Schools and Colleges*

MYRON S. AISENBERG, *Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

**FLORENCE M. GIPE**, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940;  
ED.D., University of Maryland, 1952.

**LADISLAUS F. GRAPSKI**, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University  
of Denver, 1942; M.B.A. in Hospital Administration, University of Chicago, 1943.

**IRVIN C. HAUT**, *Director, Agricultural Experiment Station and Head, Department  
of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D.,  
University of Maryland, 1933.

**ROGER HOWELL**, *Dean of the School of Law*

B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland,  
1917.

**WILBERT J. HUFF**, *Director, Engineering Experiment Station*

B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale Uni-  
versity, 1917; D.SC. (HON.), Ohio Northern University, 1927.

**SELMA F. LIPPEATT**, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945;  
PH.D., Pennsylvania State University, 1953.

**FREDERIC T. MAVIS**, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

**PAUL E. NYSTROM**, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A.,  
Harvard University, 1948; D.P.A., 1951.

**J. FREEMAN PYLE**, *Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

**LEON P. SMITH**, *Dean of the College of Arts and Sciences*

B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930;  
Diplome de l'Institut de Touraine, 1932.

**WILLIAM S. STONE**, *Dean of the School of Medicine and Director of Medical  
Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929;  
PH.D., (HON.), University of Louisville, 1946.

## *General Administrative Officers*

**G. WATSON ALGIRE**, *Director of Admissions and Registrations*

B.A., University of Maryland, 1930; M.S., 1931.

**THEODORE R. AYLESWORTH**, *Professor of Air Science and Head, Department of  
Air Science*

B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania, 1949.

**NORMA J. AZLEIN**, *Registrar*

B.A., University of Chicago, 1940.

- B. JAMES BORRESON, *Executive Dean for Student Life*  
B.A., University of Minnesota, 1944.
- DAVID L. BRIGHAM, *Director of Alumni Relations*  
B.A., University of Maryland, 1938.
- C. WILBUR CISSEL, *Director of Finance and Business*  
B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.
- WILLIAM W. COBEY, *Director of Athletics*  
A.B., University of Maryland, 1930.
- LESTER M. DYKE, *Director of Student Health Service*  
B.S., University of Iowa, 1936; M.D., University of Iowa, 1926.
- GEARY F. EPPLEY, *Dean of Men*  
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
- GEORGE W. FOGG, *Director of Personnel*  
B.A., University of Maryland, 1926; M.A., 1928.
- ROBERT J. MCCARTNEY, *Director of University Relations*  
B.A., University of Massachusetts, 1941.
- GEORGE W. MORRISON, *Associate Director and Supervising Engineer Physical Plant (Baltimore)*  
B.S., University of Maryland, 1927; E.E., 1931.
- HOWARD ROVELSTAD, *Director of Libraries*  
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S. Columbia University, 1940.
- ADELE H. STAMP, *Dean of Women*  
B.A., Tulane University, 1921; M.A., University of Maryland, 1924.
- GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*  
B.S., University of Maryland, 1933.

### *Division Chairmen*

- JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*  
B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.
- HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*  
B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.
- WILBERT J. HUFF, *Chairman of the Division of Physical Sciences*  
B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale University, 1917; D.SC., (HON.), Ohio Northern University, 1927.
- CHARLES E. WHITE, *Chairman of the Lower Division*  
B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.
- ADOLF E. ZUCKER, *Chairman of the Division of Humanities*  
B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.



## CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

### GENERAL COMMITTEE ON EDUCATIONAL POLICY

Dr. Ronald Bamford (Graduate School), *Chairman*

### COMMITTEE ON ADMISSIONS

Dr. Russell G. Brown (Agriculture), *Chairman*

### COMMITTEE ON INSTRUCTIONAL PROCEDURES

Dr. Ronald Bamford (Graduate School), *Chairman*

### COMMITTEE ON SCHEDULING AND REGISTRATION

Dr. Robert Rappleye (Agriculture), *Chairman*

### COMMITTEE ON PROGRAMS, CURRICULA AND COURSES

Dr. Irvin C. Haut (Graduate School), *Chairman*

### COMMITTEE ON SCHOLARSHIPS AND GRANTS-IN-AID

Dr. Paul Nystrom (Agriculture), *Chairman*

### COMMITTEE ON FACULTY RESEARCH

Dr. Edward J. Herbst (Medicine), *Chairman*

### COMMITTEE ON PUBLIC FUNCTIONS AND COMMENCEMENTS

Mr. B. James Borreson (Executive Dean for Student Life), *Chairman*

### COMMITTEE ON LIBRARIES

Dr. Charles Murphy (Arts and Sciences), *Chairman*

### COMMITTEE ON UNIVERSITY PUBLICATIONS

Dr. Charles A. Taff (Business and Public Administration), *Chairman*

### COMMITTEE ON STUDENT LIFE AND ACTIVITIES

Dr. L. Morris McClure (Education), *Chairman*

### COMMITTEE ON STUDENT PUBLICATIONS AND COMMUNICATIONS

Dr. Franklin Cooley (Arts and Sciences), *Chairman*

### COMMITTEE ON STUDENT DISCIPLINE

Dr. Allan J. Fisher (Business and Public Administration), *Chairman*

### COMMITTEE ON RELIGIOUS LIFE

Professor Louis E. Otts (Engineering), *Chairman*

### COMMITTEE ON STUDENT HEALTH AND WELFARE

Dr. Marvin H. Eyler (Physical Education), *Chairman*

### COMMITTEE ON STUDENT EMPLOYMENT AND SELF-HELP

Dr. Warren R. Johnson (Physical Education), *Chairman*

### COMMITTEE ON INTERCOLLEGIATE COMPETITION

Dr. Clyne S. Shaffner (Agriculture), *Chairman*

### COMMITTEE ON PROFESSIONAL ETHICS, ACADEMIC FREEDOM AND TENURE

Dr. Peter Lejins (Arts and Sciences), *Chairman*

### COMMITTEE ON APPOINTMENTS, PROMOTIONS AND SALARIES

Dr. William E. Bickley (Agriculture), *Chairman*

### COMMITTEE ON FACULTY LIFE AND WELFARE

Dr. Guy B. Hathorn (Business and Public Administration), *Chairman*

### COMMITTEE ON MEMBERSHIP AND REPRESENTATION

Dr. Joseph C. Biddix (Dentistry), *Chairman*

## THE COLLEGE

THE COLLEGE OF EDUCATION MEETS THE NEEDS OF THE FOLLOWING CLASSES of students: (1) persons preparing to teach in secondary schools, elementary schools, kindergarten, and nursery schools; (2) present or prospective teachers who wish to supplement their preparation; (3) students preparing for educational work in the trades and industries; (4) graduate students preparing for teaching, supervisory, or administrative positions; (5) students whose major interests are in other fields, but who desire courses in education.

### Special Facilities and Activities

#### RESEARCH AND TEACHING FACILITIES

Because of the location of the University in the suburbs of the nation's capital, unusual facilities for the study of education are available to its students and faculty. The Library of Congress, the library of the United States Office of Education, and special libraries of other government agencies are accessible, as well as the information services of the National Education Association, American Council on Education, United States Office of Education, and other institutions, public and private. The school systems of the District of Columbia, Baltimore, and the counties of Maryland offer generous cooperation.

#### THE INSTITUTE FOR CHILD STUDY

The Institute for Child Study carries on the following activities: (1) it undertakes basic research in human development; (2) it digests and synthesizes research findings from the many sciences that study human beings; (3) it plans, organizes, and provides consultant service programs of direct child study by in-service teachers in individual schools or in municipal, county or state systems; (4) it offers field training to a limited number of properly qualified doctoral students, preparing them to render expert consultant service to schools and for college teaching of human development. Inquiries should be addressed to Director, Institute for Child Study.

The College of Education operates a Workshop on Child Development and Education for six weeks each summer. Requiring full-time work of all participants it provides opportunities for (1) study and synthesis of scientific knowledge about children and youth; (2) training in the analysis of case records; (3) training for study-group leaders for in-service child study programs; (4) planning in-service programs of child study for teachers and pre-service courses and laboratory experiences for prospective teachers; (5) analysis of the curricular, guidance, and school organization implications of scientific knowledge about human development and behavior. Special announcements of the workshop are available about March 15 of each year and advanced registration is required because the

## *Special Facilities, Undergraduate Programs*

number of participants must be limited. Inquiries should be addressed to the Director, Workshop on Child Development and Education.

### INDUSTRIAL EDUCATION DEPARTMENT

The Industrial Education Department is housed in a new building known as the J. Milton Patterson Building. The facilities of this building are devoted exclusively to the work of the Department. There are ten shops, a drafting room, library, conference room and two classrooms. All of the shops are adequately equipped with modern tools and machines.

### THE UNIVERSITY OF MARYLAND NURSERY SCHOOL AND KINDERGARTEN

The University of Maryland operates a nursery school and kindergarten on the campus in which students majoring in Childhood Education receive training and practical experience.

### PROFESSIONAL AND PRE-PROFESSIONAL ORGANIZATIONS

The College of Education sponsors two professional organizations: Phi Delta Kappa, the national professional fraternity for men in education, and Iota Lambda Sigma, the national honorary fraternity in industrial education. Both fraternities have large and active chapters and are providing outstanding professional leadership in their fields of service.

The College of Education also sponsors a chapter of the Student National Education Association. This chapter is open to undergraduate students on the College Park campus.

### COURSES OUTSIDE OF COLLEGE PARK

Through the University College, a number of courses in education are offered in Baltimore and elsewhere. These courses are chosen to meet the needs of groups of students in various centers. In these centers, on a part-time basis, a student may complete a part of the work required for an undergraduate or graduate degree.

Announcements of such courses may be obtained by addressing requests to the Dean, University College, College Park, Maryland.

## Undergraduate Programs

### REQUIREMENTS FOR ADMISSION

All students desiring to enroll in the College of Education must apply to the Director of Admissions of the University of Maryland at College Park.

In selecting students more emphasis will be placed upon good marks and other indications of probable success in college rather than upon a fixed pattern of subject matter. Of the sixteen required units, four (4) units of English and one unit each of social sciences, natural sciences, and mathematics are required. Additional units in mathematics, natural sciences, and social sciences are desirable for a program that permits the greatest amount of flexibility in meeting the requirements of various College of Education curricula. While a foreign language is desirable for certain programs, no foreign language is required for entrance. Fine arts, trade and vocational subjects are acceptable as electives. Every prospective applicant should be certain that his preparation in mathematics is adequate for any program that he might wish to enter. A special fee is charged for all remedial work in mathematics with the exception of the course in solid geometry.

Students are referred to the publication *An Adventure in Learning* for a complete statement of requirements for admission to the different curricula in the College of Education.

Candidates for admission whose high school or college records are consistently low are strongly advised not to seek admission to the College of Education.

#### GENERAL INFORMATION

Detailed information concerning fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September of each year to all undergraduate students, and again in February to all new undergraduate students not previously enrolled in the preceding fall semester.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

##### COLLEGES LOCATED AT COLLEGE PARK:

Dean  
(College in which you are interested)  
The University of Maryland  
College Park, Maryland

##### PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean  
(School in which you are interested)  
The University of Maryland  
Lombard and Greene Streets  
Baltimore 1, Maryland



## Undergraduate Programs

### AIR SCIENCE INSTRUCTION

All male students, unless specifically exempted under University rules, are required to take Basic Air Science training for a period of two years. The successful completion of this course is a prerequisite for graduation but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of R.O.T.C. training will be required to complete the course or take it until graduation, whichever occurs first.

Selected students who wish to do so may carry Advanced Air Science courses during their junior and senior years which lead to a regular or reserve commission in the United States Air Force.

For further details concerning the requirements in air science, write to the Editor of Publications for the Department of Air Science catalog.

### PHYSICAL EDUCATION AND HEALTH

All undergraduate students classified academically as freshmen and sophomores, irrespective of their physical condition, who are registered for more than six semester hours, are required to complete four prescribed courses in physical education. These courses must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have credit in these courses or their equivalent, must complete them or take them until graduation, whichever occurs first. Students with military service may receive credit for these required courses by applying to Room 140, Cole Activities Building.

### GUIDANCE IN REGISTRATION

At the time of matriculation each student is tentatively assigned to a member of the faculty who acts as the student's personal adviser. The choice of subject areas within which the student will prepare to teach will be made under faculty guidance during the first year in the Orientation to Education course required of all freshmen. Thereafter, the student will advise regularly with the faculty member in the College of Education responsible for his teaching major. While it may be possible to make satisfactory adjustments as late as the junior year for students from other colleges who have not already entered upon the sequence of professional courses, it is highly desirable that the student begin his professional work in the freshman year. *Students who intend to teach* (except Vocational Agriculture) *should register in the College of Education*, in order that they may have the continuous counsel and guidance of the faculty directly responsible for teacher education at the University of Maryland.

### JUNIOR STANDING

To earn junior standing a student must complete fifty-six (56) semester hours of academic credit with an average grade of "C" (2.0) or better. In computing



this average, the following provisions apply: all academic courses carrying one or more credits which have been taken up to the time of computation shall be included; courses carrying "0" credit shall not be included; in every course only the most recent grade shall be counted; courses with grade of "F" shall be included; courses in Basic Air Science, the physical education required of all University students, and the health courses required of all women students shall not be included. Courses in Advanced Air Science and courses in health or physical education which are taken as electives shall be included.

Detailed regulations pertaining to junior standing are presented in full in the publication, *University General and Academic Regulations*.

The first two years of college work are preparatory to the professional work of the junior and senior years. To be eligible to enter the junior year professional courses, a student must have attained junior status.

#### CERTIFICATION OF TEACHERS

The State Department of Education certifies to teach in the approved high schools of the state only graduates of approved colleges who have satisfactorily fulfilled subject-matter and professional requirements. The several curricula of the College of Education fulfill State Department requirements for certification.

Students intending to qualify as teachers in Baltimore, Washington, or any other city or state should, in their junior year, obtain a statement of certification requirements from these areas and be guided thereby in the selection of courses. Advisers will assist in obtaining and utilizing such information.

The teacher education program is accredited by the National Council for Accreditation of Teacher Education.

#### DEGREES

The degrees conferred upon students who have met the conditions prescribed for a degree in the College of Education are Bachelor of Arts and Bachelor of Science. Majors in English, social sciences, language, and art receive the B.A. degree. Mathematics majors may receive either degree. All others receive the B. S. degree.

#### COSTS

Actual annual costs of attending the University include: \$185.00 fixed charges; \$101.00 special fees; \$400.00 board; \$170.00 to \$200.00 lodging for Maryland residents, or \$220.00 to \$250.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged all new students. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee. A charge of \$300.00 is assessed to all students who are non-residents of the state of Maryland.

For a more detailed statement of these costs, write to the Editor of Publications for the publication *An Adventure in Learning*.

## Graduate Studies

### GRADUATE STATUS

For graduate study in education a student must have earned at least 16 semester credits in education at the undergraduate level, and hold a bachelor's or master's degree from a college or university of recognized standing. This requirement may be interpreted so that foundation work in fields other than education may be accepted in cases of graduate students not preparing for school work. The student must also satisfy the Graduate School as to his ability to do graduate work.

All *new* graduate students in education are required, during the first semester of graduate work, to take a test battery. A testing fee of \$5.00 will be charged on first registration.

### REGISTRATION

A graduate student in education must matriculate in the Graduate School. Application for admission to the Graduate School should be made prior to dates of registration on blanks obtained from the office of the Dean of the Graduate School. For further instructions a student should consult the Graduate School Announcements.

### MASTERS' DEGREES

A graduate student in education may matriculate for a Master of Education or a Master of Arts degree. For requirements of these degrees, the student should consult both the Graduate School Announcements and the duplicated material issued by the College of Education. On matriculation, the student should select a faculty adviser.

A sixth year program preparing for advanced graduate specialist work in education is offered.

### DOCTORS' DEGREES

Programs leading to a Doctor of Philosophy in education or a Doctor of Education degree are administered for the Graduate School by the Department of Education. For requirements of these degrees, the student should consult both the Graduate School Announcements and the statement of policy relative to doctoral programs in education. If the student has not already made arrangements with a member of the faculty to advise him, he should consult with the chairman of the Education Committee on Doctoral Programs regarding a proper adviser.

## CURRICULA AND REQUIRED COURSES

The undergraduate curricula in the College of Education with advisers for each curriculum are as follows:

### Academic Education

English—Marie D. Bryan

Foreign Languages—Staff

Mathematics—John R. Mayor, Helen Garstens

Natural Sciences—Orval L. Ulry

Social Studies—Robert G. Risinger, Jean Grambs

Speech—Warren Strausbaugh (minor only)

### Agricultural Education (under the College of Agriculture)

H. Palmer Hopkins

### Art Education

Edward L. Longley, Jr.

### Business Education

Arthur S. Patrick

### Childhood Education

James L. Hymes, Jr.

Margaret A. Stant

### Elementary Education

Alvin W. Schindler

Marie Denecke

Glenn O. Blough

Ann Cimino

Leo W. O'Neill

### Home Economics Education

Mabel S. Spencer

### Industrial Education

Donald Maley

Edmund D. Crosby

Paul E. Harrison

Eckhart Jacobsen

George R. Merrill

Carl S. Schramm

William F. Tierney

### Music Education

Herbert H. Henke

### Physical Education (Men)

Albert W. Woods

### Physical Education (Women)

Dorothy R. Mohr

## General Requirements

### GENERAL REQUIREMENTS OF THE COLLEGE

A total of 120 semester hours in addition to the University requirement in military science and physical education is required for graduation in the College of Education. In no case shall the total number of semester hours required for graduation be less than 128.

The following are minimum requirements for graduation: English—12 semester hours; social studies—12 semester hours as follows: G. & P. 1—American Government; H. 5, 6—History of American Civilization; and one of the following courses: Soc. 1—Sociology of American Life, Phil. 1—Philosophy for Modern Man, Psych. 1—Introduction to Psychology, Econ. 31—Principles of Economics, or Econ. 37—Fundamentals of Economics; science or mathematics—6 semester hours; education—20 semester hours; speech—3 semester hours; physical education and military science as required by the University. (Students who qualify in classification tests in English, American history, or American government will be exempted from a three-hour requirement in the area concerned and will select a replacement from a set of courses designated. (See the publication *An Adventure in Learning*.)

Marks in all required upper division courses in education and in subjects in major and minor fields must be "C" or higher. A general average of "C" or higher must be maintained. In order to be admitted to a course in student teaching, *a student must have a grade point average of 2.30, a doctor's certificate indicating that the applicant is free of communicable diseases, and the consent of the instructor in the appropriate area. Application must be made with the appropriate adviser by the middle of the semester which precedes the one in which student teaching will be done.*

Exceptions to curricular requirements and rules of the College of Education must be recommended by the student's adviser and approved by the Dean.

Students who are not enrolled in the College of Education but who are preparing to teach must meet all curricular and scholastic requirements of the College of Education.

### MAJORS AND MINORS

Students select a teaching major: for example, social science, art, music, physical education. Those electing the academic curriculum will ordinarily select both a teaching major and a teaching minor, and students in other curricula may select minors if they so desire. Advisers may waive the requirement for a minor when necessary to permit the development of an approved area such as psychology, human development, or sociology.

Students selecting an academic major and an academic minor, or those selecting *one* special teaching field such as industrial education need to take only one methods course: for example, Ed. 140 or Ind. Ed. 140. Students who select an academic major and a special fields minor, or vice versa, must take methods courses in both the major and minor fields, and should divide their student teaching between the two fields.

## ACADEMIC EDUCATION

Students enrolled in this curriculum will meet the above minimum requirements in English and social sciences, plus the following:

- (1) Foreign language for candidates for the Bachelor of Arts degree: 12 semester hours provided the student enters with less than three years of foreign language credits; 6 semester hours, if he enters with three years of such credits. No foreign language is required of any student who enters with four years of language credits nor of candidates for the Bachelor of Science degree unless specified in the curriculum.
- (2) Science or mathematics, 12 semester hours.
- (3) Education, 22-25 semester hours.
- (4) Speech, 3 semester hours.

All students who elect the academic education curriculum will fulfill the preceding *general* requirements and also prepare to teach one or more school subjects which will involve meeting *specific* requirements in *particular* subject matter fields.

The specific requirements by subject fields are as follows:

*English.* A major in English requires 36 semester hours as follows:

Composition and Literature .....	12 semester hours
American Literature, Advanced .....	3 semester hours
Electives .....	21 semester hours

A minor in English requires 26 semester hours. It includes the 15 semester hours prescribed for the major and 11 hours of electives.

Electives must be chosen with the approval of the adviser.

*Social Sciences.* For a major in this group 36 semester hours are required, of which at least 18 hours must be in history, including 6 hours in American history and 6 hours in European history. Six of the 18 hours must be in advanced courses. For a minor in the group, 24 hours are required, as specified below, less the electives.

History (including one year each of American and European history) .....	18 semester hours
Economics, sociology, government, consumer education, or geography .....	6 semester hours
Electives in social sciences .....	12 semester hours

Electives should be chosen so that of the 18 hours of electives there will be a total of at least 3 in economics, 3 in geography, 3 in government and politics, and 3 in sociology.



## *Academic Education Curriculum*

*Foreign Languages.* All students preparing to teach French, German, or Spanish are required to take Comparative Literature 101 and 102 and are strongly advised to take the review course for majors. Further courses in comparative literature along with work in European or Latin American history are also recommended.

Specific minimum requirements in the three languages are a semester each of intermediate and advanced conversation (French, German, or Spanish 8 and 80), a semester of grammar review, six hours of introductory survey of the literature (French, German, Spanish 75 and 76), one semester of a life and culture course (French, German, Spanish 161 or 162) and six hours in literature courses numbered 100 or above. If a foreign language is offered as a second field, all major requirements must be met.

*Classical Language—Latin.* A minor for teaching Latin requires 24 prescribed semester hours of Latin based upon two years of high school Latin or 18 prescribed semester hours of Latin plus 6 elective hours based upon four years of high school Latin. Those students with two years of high school Latin should take Latin 3, 4, 5, 51, 52, 61, 101, and 102. Those with four years of high school Latin begin with Latin 5; otherwise, the same as above with 6 hours selected from Latin 103, 104, or 105.

It is recommended that electives also be taken from Latin 70, History 153, Comparative Literature 101, English 101, and Art 9.

*Mathematics.* A major in mathematics requires 30 semester hours and a minor, 20 semester hours. The following courses must be included in both major and minor: Math. 18, 19—Elementary Mathematical Analysis (5, 5), and Math. 20, 21—Calculus (4, 4).

Electives in mathematics are selected with the advice of the adviser.

*Science.* In general science a major of 40 semester hours and a minor of 30 semester hours are offered, each including the following courses: Chem. 1, 3—General Chemistry (4, 4), Zool. 1—General Zoology (4), Bot. 1—General Botany (4), Phys. 10, 11—Fundamentals of Physics (4, 4) or Phys. 1, 2—Elements of Physics (3, 3).

Other courses will be chosen subject to the approval of the student's major adviser and of the science department in which his interest lies.

Minors of 20 semester hours are offered in chemistry, in physics, and in biological sciences. A minor in biology must be supported by a one-year course in chemistry. A minor in physics must be supported by a one-year course in chemistry. A minor in chemistry must be supported by a one-year course in physics.

The requirements for major and minor are met if 52 semester hours in natural science, including the above listed courses, are offered.

*Speech.* A minor of 22 semester hours is offered in speech. The minimum requirements for this minor are 16 semester hours in addition to the 16 semester hours of departmental requirements in Speech 1 and 3. The 16 semester hours above the departmental requirement must include 6 hours of courses numbered 100 or higher. It is the policy of the department to build a program of study in anticipation of the needs of prospective teachers, supervisors, correctionists, dramatic coaches, and other specialists in the general field of speech. All programs for the minor must be approved by the departmental adviser.

# ACADEMIC EDUCATION CURRICULUM

	Semester	
	I	II
<i>Freshman Year</i>		
Ed. 1—Freshman Orientation <sup>1</sup> .....	0	0
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life, Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology <sup>2</sup> ....	3	..
Sp. 1—Public Speaking .....	..	3
G. & P. 1—American Government <sup>1</sup> .....	..	3
A. S. 1, 2—Basic Air Science (men) .....	2	2
P. E. 1, 3—(men); P. E. 2, 4 (women).....	1	1
Hea. 2—Personal Health (women) .....	2	..
Hea. 4—Community Health (women) .....	..	2
Science, mathematics, foreign language or major and minor requirements .....	4-6	6
Total .....	15-17	17-18
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education <sup>1</sup> .....	2	..
Eng. 3, 4—Composition and World Literature, or .....	3	3
Eng. 5, 6—Composition and English Literature .....		
H. 5, 6—History of American Civilization .....	3	3
A. S. 3, 4—Basic Air Science (men) .....	2	2
P. E. 5, 7 (men); P. E. 6, 8 (women) .....	1	1
Science, mathematics, foreign language or major and minor requirements .....	6	6
Total .....	17	15
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development ....	3	3
Major and minor requirements, electives .....	15	15
Total .....	18	18

<sup>1</sup>May be taken either semester.

<sup>2</sup>Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

	Semester	
	I	II
<i>Senior Year</i>		
Ed. 140—Curriculum, Instruction and Observation <sup>1</sup> . . . . .	3	..
Ed. 145—Principles and Methods of Secondary Education <sup>1</sup> . . . .	3	..
Ed. 148—Student Teaching in Secondary Schools <sup>1</sup> . . . . .	8	..
Electives <sup>2</sup> . . . . .	2-3	..
Major and minor requirements, electives <sup>1</sup> . . . . .	..	16
Total . . . . .	16-17	16

## AGRICULTURAL EDUCATION

This curriculum is designed to prepare students for teaching vocational agriculture in high schools. To obtain full particulars on course requirements, the student should consult the catalog of the College of Agriculture.

## ART EDUCATION

This curriculum is planned to meet the growing demand for teachers and supervisors of art activity. Emphasis is placed upon ways to draw out and develop the creative inclinations of beginners; to integrate art and other areas of study; to utilize art in solving social problems.

### ART EDUCATION CURRICULUM

	Semester	
	I	II
<i>Freshman Year</i>		
Ed. 1—Freshman Orientation <sup>1</sup> . . . . .	0	0
Eng. 1, 2—Composition and American Literature . . . . .	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology <sup>3</sup> . . . .	..	3
G. & P. 1—American Government . . . . .	3	..
Sp. 1—Public Speaking . . . . .	3	..
Pr. Art 1—Design . . . . .	..	3
Pr. Art 2—Survey of Art History . . . . .	2	..
Hea. 2—Personal Health (women) . . . . .	2	..
Hea. 4—Community Health (women) . . . . .	..	2
A. S. 1, 2—Basic Air Science (men) . . . . .	2	2
P. E. 1, 3 (men), P. E. 2, 4 (women) . . . . .	1	1
Language or electives <sup>4</sup> . . . . .	3-4	2-4
Total . . . . .	19-20	16-18

<sup>1</sup>May be taken either semester, except Ed. 140 and 148 in certain major areas.

<sup>2</sup>English and social studies majors must elect Ed. 134.

<sup>3</sup>Or Econ. 31, Principles of Economics (3 credits) or Econ. 37, Fundamentals of Economics (3 credits) in the sophomore year.

<sup>4</sup>Required foreign language: 12 semester hours provided the student enters with less than three years of foreign language credit; 6 semester hours, if he enters with three years of such credit. No foreign language is required of any student who enters with four years of language credit.

	Semester	
	I	II
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education .....	2	..
Eng. 3, 4—Composition and World Literature .....	3	3
Science or Mathematics .....	3	3
Pr. Art 3—Silk Screen Printing .....	2	..
Pr. Art 4—Three-dimensional Design .....	..	2
Pr. Art 20—Costume Design .....	3	..
Pr. Art 30—Typography and Lettering .....	..	3
Pr. Art 40, 41—Interior Design .....	1	3
Cr. 2—Simple Crafts .....	..	2
Art 13—Elementary Sculpture or Cr. 20. Ceramics .....	2	..
A. S. 3, 4—Basic Air Science (men) .....	2	2
P. E. 5, 7 (men); P. E. 6, 8 (women) .....	1	1
Totals: Women .....	17	17
Men .....	19	19
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development .....	3	3
H. 5, 6—American History .....	3	3
Pr. Art 0—Professional Lectures .....	..	0
Pr. Art 21—Action Drawing of Art 104. Life Class .....	..	2-3
Cr. 5—Puppetry .....	..	3
Art 6—Still Life .....	3	..
Art 9, 11—Historical Survey of Painting, Sculpture, Architecture .....	3	3
Language or electives <sup>1</sup> .....	4-6	2-4
Total .....	16-18	16-19
<i>Senior Year</i>		
Ed. 140—Curriculum, Instruction and Observation in Art ....	3	..
Pr. Art 132—Advertising Layout .....	2	..
Art 7—Landscape Painting .....	3	..
Ed. 134—Materials and Procedures for the Secondary Core Curriculum .....	..	3
Ed. 145—Principles and Methods of Secondary Education ....	..	3
Ed. 148—Student Teaching in the Secondary Schools <sup>2</sup> ....	..	8
Pr. Art 100—Mural Design .....	2	..
Language or electives <sup>1</sup> .....	6-8	..
Total .....	16-18	14

A minimum of 24 semester hours constitutes a minor in art education. Required: Pr. Art 1, Pr. Art 2, Cr. 2, Art 7, Ed. 140. Electives are to be chosen from courses which carry the symbols Pr. Art, Cr., Art. Electives are to be chosen in consultation with the adviser to art education students. Scheduling of laboratory courses necessitates an early start on an art program. The art minor does not qualify students for Ed. 148, Student Teaching in the Secondary Schools.

<sup>1</sup>Required foreign language: 12 semester hours provided the student enters with less than three years of foreign language credit; 6 semester hours, if he enters with three years of such credit. No foreign language is required of any student who enters with four years of language credit.

<sup>2</sup>Available only during 8 weeks of the spring semester.

## BUSINESS EDUCATION

Two curricula are offered for the preparation of teachers of business subjects. The general business education curriculum qualifies for teaching all business subjects except shorthand. Providing thorough training in general business, including economics, this curriculum leads to teaching positions on both junior and senior high school levels. By the proper selection of electives, persons following this curriculum may also qualify as teachers of social studies.

The secretarial education curriculum is adapted to the needs of those who wish to become teachers of shorthand as well as other business subjects.

### GENERAL BUSINESS EDUCATION CURRICULUM

	Semester	
	I	II
<i>Freshman Year</i>		
Ed. 1—Freshman Orientation .....	0	0
Eng. 1, 2—Composition and American Literature .....	3	3
G. & P. 1—American Government.....	3	..
Sp. 1—Public Speaking .....	..	3
O. T. 1, 2—Principles and Intermediate Typewriting .....	2	2
B. A. 10, 11—Organization and Control .....	2	2
Geog. 1—Economic Resources .....	..	2
Math. 5, 6—Business Algebra and Mathematics of Finance ....	3	3
Elective .....	2	..
A. S. 1, 2—Basic Air Science (men) .....	2	2
Hea. 2, 4—Personal and Community Health (women) .....	2	2
P. E. 1, 3—Orientation to Physical Education, and Develop- mental and Combative Sports (men) .....	1	1
P. E. 2, 4—Basic Skills of Sports and Rhythms (women) ....	1	1
Total .....	18	18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature .....	3	3
O. T. 10—Office Typewriting Problems .....	2	..
Ed. 2—Introduction to Education .....	..	2
H. 5, 6—History of American Civilization.....	3	3
B. A. 20, 21—Principles of Accounting .....	4	4
Econ. 31, 32—Principles of Economics.....	3	3
A. S. 3, 4—Basic Air Science (men) .....	2	2
P. E. 5, 7—Aquatic and Team Sports, and Recreational Sports (men) .....	1	1
P. E. 6, 8—Selected Sports and Dance (women) .....	1	1
Total .....	16-18	16-18



	Semester	
	I	II
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development ....	3	3
B. A. 100—Office Operations and Management .....	3	..
B. A. 166—Business Communications .....	..	3
B. A. 14—Survey of Office Machines .....	2	..
B. A. 112—Records Management .....	..	2
B. A. 101—Integrated Data Processing for Internal Control ..	..	3
Econ. 140—Money and Banking .....	3	..
Soc. 1—Sociology of American Life (or Phil. 1 or Psych. 1)..	3	..
B. A. 150A—Marketing Principles and Organization.....	3	..
B. A. 180—Business Law .....	..	4
Total .....	17	15
<i>Senior Year</i>		
B. A. 181—Business Law.....	4	..
B. A. 102—Electronic Data Processing Systems .....	3	..
Ed. 140—Curriculum, Instruction, and Observation—Business Subjects .....	3	..
Ed. 145—Principles and Methods of Secondary Education ....	..	3
B. Ed. 100—Techniques of Teaching Office Skills.....	..	3
Ed. 148—Student Teaching in Secondary Schools.....	..	8
Electives <sup>1</sup> .....	5	..
Total .....	15	14

## SECRETARIAL EDUCATION CURRICULUM

*Freshman Year*

Ed. 1—Freshman Orientation .....	0	0
Eng. 1, 2—Composition and American Literature .....	3	3
G. & P. 1—American Government .....	3	..
Soc. 1—Sociology of American Life (or Phil. 1, or Psych. 1.) ..	..	3
O. T. 1, 2—Principles and Intermediate Typewriting .....	2	2
O. T. 12, 13—Principles of Shorthand I, II .....	3	3
Math. 5, 6—Business Algebra and Mathematics of Finance ...	3	3
A. S. 1, 2—Basic Air Science (men) .....	2	2
Hea. 2, 4—Personal and Community Health (women) .....	2	2
P. E. 1, 3—Orientation to Physical Education and Developmental and Combative Sports (men) .....	1	1
P. E. 2, 4—Basic Skills of Sports and Rhythms (women) ....	1	1
Total .....	20	20

<sup>1</sup>A minimum of 55 semester hours of courses in economics, business administration, and office techniques are required.

## Business Education Curriculum

	Semester	
	I	II
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education .....	..	2
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
O. T. 10—Office Typewriting Problems .....	2	..
O. T. 16, 18—Advanced Gregg Shorthand .....	2	2
O. T. 17, 19—Problems in Gregg Transcription.....	2	2
B. A. 14—Survey of Office Machines.....	2	..
Sp. 1—Public Speaking .....	..	3
A. S. 3, 4—Basic Air Science (men) .....	2	2
P. E. 5, 7—Aquatic and Team Sports, and Recreational Sports (men) .....	1	1
P. E. 6, 8—Selected Sports and Dance (women) .....	1	1
Total .....	15-17	16-18
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development ....	3	3
B. A. 20, 21—Principles of Accounting .....	4	4
Econ. 37—Fundamentals of Economics .....	3	..
B. A. 100—Office Operations and Management .....	3	..
O. T. 110—Administrative Secretarial Procedures .....	..	3
B. A. 166—Business Communications .....	..	3
Econ. 140—Money and Banking .....	3	..
B. A. 180—Business Law .....	..	4
Total .....	16	17
<i>Senior Year</i>		
O. T. 114—Secretarial Office Practice .....	3	..
B. A. 101—Integrated Data Processing for Internal Control ....	3	..
B. A. 112—Records Management .....	2	..
B. Ed. 100—Techniques of Teaching Office Skills .....	..	3
Ed. 140—Curriculum, Instruction and Observation— Business Subjects .....	3	..
Ed. 145—Principles and Methods of Secondary Education ....	..	3
Ed. 148—Student Teaching in Secondary Schools .....	..	8
Electives <sup>1</sup> .....	5	..
Total .....	16	14

## CHILDHOOD EDUCATION

The childhood education curriculum has as its primary goal the preparation of nursery school and kindergarten teachers. It is also planned to further the personal development of the student and to provide general education in one facet of homemaking.

<sup>1</sup>A minimum of 55 semester hours of courses in economics, business administration, and office techniques are required.

Observation and student teaching are done in the University Nursery School and Kindergarten on the campus and in approved schools in nearby communities. Each student must select a minor in an approved field.

Graduates receive a B.S. degree and meet the requirements for certification for teaching kindergarten and nursery school in Maryland. Each student should have one summer of experience in working with children.

# CHILDHOOD EDUCATION CURRICULUM

	(Semester—)	
	I	II
<i>Freshman Year</i>		
C. Ed. 2—Introduction to Childhood Education <sup>1</sup> .....	2	..
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology <sup>2</sup> .....	3	..
G. & P. 1—American Government <sup>1</sup> .....	..	3
Sp. 3—Fundamentals of General American Speech .....	..	3
Bot. 1—General Botany .....	4	..
Zool. 1—General Zoology .....	..	4
Hea. 2—Personal Health (women) .....	2	..
Hea. 4—Community Health (women) .....	..	2
P. E. 2, 4 .....	1	1
Ed. 1—Freshman Orientation <sup>1</sup> .....	..	0
Total .....	15	16
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or .....	3	3
Eng. 5, 6—Composition and English Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Music 16—Music Fundamentals for the Classroom Teacher....	..	3
C. Ed. 50—Child Development I .....	3	..
C. Ed. 51—Child Development II.....	..	3
Chem. 1—General Chemistry .....	4	..
or Geog. 30—Principles of Morphology (3)		
or Geog. 40—Principles of Meteorology (3)		
or Phys. 1—Elements of Physics (3)		
Chem. 3—General Chemistry .....	..	4
or Foods 1—Introductory Foods (3)		
or Nut. 10—Elements of Nutrition (3)		
or one of the other physical science courses listed above		
P. E. 6, 8.....	1	1
Electives .....	3	..
Total .....	17	17

<sup>1</sup>May be taken either semester.

<sup>2</sup>Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

	Semester	
	I	II
<i>Junior Year</i>		
C. Ed. 115—Children's Activities and Activities Materials . . . .	..	3
C. Ed. 116—Creative Music for Young Children . . . . .	3	..
C. Ed. 140—Curriculum, Instruction, Observation—Early Childhood Education . . . . .	..	3
Math. 0—Basic Mathematics (if required) . . . . .	0	..
Math. 3—Fundamentals of Mathematics . . . . .	..	4
or Math. 5—Business Algebra (3)		
Electives . . . . .	12	6
Total . . . . .	15	16
<i>Senior Year</i>		
C. Ed. 149—Teaching Nursery School . . . . .	4-8	..
C. Ed. 159—Teaching Kindergarten . . . . .	..	4-8
H. D. Ed. 100, 101—Principles of Human Development . . . .	3	3
C. Ed. 145—Guidance in Behavior Problems <sup>1</sup> . . . . .	3	..
Electives . . . . .	2-6	5-9
Total . . . . .	16	16

## ELEMENTARY EDUCATION

There are two undergraduate curriculums in elementary education. The first one is for regular undergraduate students who desire to earn the Bachelor of Science degree and to qualify for an elementary school teaching certificate. The second curriculum is for teachers in service.

### ELEMENTARY EDUCATION CURRICULUM

#### FOR REGULAR UNDERGRADUATE STUDENTS

This curriculum is designed for regular undergraduate students who wish to qualify for teaching positions in elementary schools. Students who complete the curriculum will receive the Bachelor of Science degree, and they will meet the Maryland State Department of Education requirements for the Bachelor of Science Certificate in Elementary Education. The curriculum also meets certification requirements in many other states, Baltimore, and District of Columbia.

Some of the academic courses need not be taken in the indicated sequence. For example, Bot. 1 may be taken during the second semester of the freshman year instead of the first semester, or it may be taken during the sophomore or junior year. However, the courses in human development education and certain other education courses must be taken during the junior year, and Ed. 149—Student Teaching in Elementary Schools should be taken during the first semester of the senior year.

-----  
<sup>1</sup>May be taken either semester.

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology <sup>2</sup> ....	3	..
G. & P. 1—American Government <sup>1</sup> .....	..	3
Bot. 1—General Botany .....	4	..
Zool. 1—General Zoology .....	..	4
Art 15—Fundamentals of Art .....	3	..
Music 16—Music Fundamentals for the Classroom Teacher <sup>3</sup> ..	..	3
Ed. 1—Freshman Orientation <sup>1</sup> .....	0	..
P. E. 1, 3 (men); P. E. 2, 4 (women) .....	1	1
Hea. 2—Personal Health (women) .....	2	..
Hea. 4—Community Health (women) .....	..	2
A. S. 1, 2—Basic Air Science (men) .....	2	2
Approved Electives (Optional)		
Total .....	16	16
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or Eng. 5, 6—Composition and English Literature.....	3	3
H. 5, 6—History of American Civilization .....	3	3
Sp. 3—Fundamentals of General American Speech .....	3	..
Ed. 2—Introduction to Education <sup>1</sup> .....	2	..
Chem. 1—General Chemistry .....	4	..
or Geog. 30—Principles of Morphology (3)		
or Geog. 40—Principles of Meteorology (3)		
or Phys. 1—Elements of Physics (3)		
Chem. 3—General Chemistry .....	..	4
or Foods 1—Introductory Foods (3)		
or Nut. 10—Elements of Nutrition (3)		
or one of the other physical science courses listed above.		
Note: Only one Geography and only one Foods course may be taken.		
Math. 0—Basic Mathematics (if required) .....	0	..
Math. 3—Fundamentals of Mathematics .....	..	4
or Math. 5—Business Algebra (3)		
P. E. 5, 7 (men); P. E. 6, 8 (women) .....	1	1
Hea. 40—Personal and Community Health (men) .....	..	3
A. S. 3, 4—Basic Air Science (men) .....	2	2
Approved Electives (women) <sup>4</sup> .....	2	3
Total .....	18	19

<sup>1</sup>May be taken either semester.

<sup>2</sup>Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

<sup>3</sup>Students planning an area of specialization in elementary school music education should substitute Music 7 for Music 16.

<sup>4</sup>Number of elective hours and choice of courses must be approved by adviser. Several electives must be taken at the 100 level during junior and senior years.



Elementary Education Curriculum

	Semester	
	I	II
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development . . .	3	3
H. 1, 2—History of Modern Europe . . . . .	3	3
Geog. 10—General Geography . . . . .	3	3
Ed. 52—Children's Literature . . . . .	2	..
Ed. 153—Teaching of Reading <sup>1</sup> . . . . .	..	2
Ed. 121—The Language Arts in the Elementary School <sup>1</sup> . . . .	..	2
Ed. 122—Social Studies in the Elementary School <sup>1</sup> . . . . .	..	2
Ed. 124—Arithmetic in the Elementary School <sup>1</sup> . . . . .	..	2
Sci. Ed. 105—Workshop in Science for Elementary Schools <sup>1</sup> . .	..	2
Approved Electives <sup>2</sup> . . . . .	6	..
Total . . . . .	17	19
<i>Senior Year</i>		
Ed. 149—Student Teaching in Elementary Schools . . . . .	16	..
Geog. 100—Regional Geography of Eastern Anglo-America ..	}	3
or Geog. 101—Regional Geog. of Western Anglo-America }		
or Geog. 120—Economic Geography of Europe . . . . .		
P. E. 120—Physical Education in the Elementary School . . .	..	3
Mus. Ed. 128—Music for the Elementary Classroom Teacher ..	..	2
Ed. 125—Art in Elementary Schools . . . . .	..	2
Approved Electives <sup>2</sup> . . . . .	..	10
Total . . . . .	16	20

AREA OF SPECIALIZATION IN ELEMENTARY SCHOOL  
PHYSICAL EDUCATION AND HEALTH EDUCATION

Students enrolled in the College of Education and majoring in elementary education may pursue an area of specialization in elementary school physical education and health education. Students interested in this area should consult with the Dean of the College of Physical Education, Recreation and Health.

AREA OF SPECIALIZATION IN ELEMENTARY  
SCHOOL MUSIC EDUCATION

Students enrolled in the College of Education and majoring in elementary education may pursue an area of specialization in elementary school music education, and thereby qualify for the Bachelor of Science Certificate in Special Subjects. In order to fulfill requirements in this area, the following courses should be taken in addition to those required in the Elementary School Curriculum:

<sup>1</sup> Open only to students in elementary curriculum. Students who register for one of these courses must register for all five courses.  
<sup>2</sup> Number of elective hours and choice of courses must be approved by adviser. Several electives must be taken at the 100 level during junior and senior years.

Music 1 (3); Music 8 (3); Music 160 or 161 (2); Music 70, 71 (4, 4); Music 80, 81 (2, 2); Applied Music; Piano (8), Voice (4); and Mus. Ed. 139 (2) in place of Mus. Ed. 128 (2) in the senior year.

# ELEMENTARY EDUCATION CURRICULUM FOR UNDERGRADUATE TEACHERS

This curriculum is for teachers who have completed a two-or three-year curriculum in a teachers college. It is also for teachers who have two or more years of successful teaching experience which can be used in lieu of student teaching to meet certification requirements.

This curriculum, leading to the Bachelor of Science degree in elementary education, requires a total of 128 semester credits. The last 30 credits earned before the conferring of the degree must be taken with the University of Maryland.

*State Department of Education requirements* provide that a teacher in service may not earn more than six credits for certification purposes during a school year. The College of Education assumes no responsibility in this connection, but candidates are advised to observe the regulation.

Specific requirements for the degree are as follows: (In meeting requirements, particular attention must be given to the footnotes.)

Requirements for individuals with approximately 64 transfer credits:

Education .....	4
English (not including freshman and sophomore English) <sup>1</sup> .....	10
Natural Science (chemistry, physics, botany, zoology, bacteriology, entomology, general science, meteorology) <sup>2</sup> .....	10
Social Science (history, government, sociology, economics, geography) <sup>3</sup>	12
Electives (as many as needed to give a total of at least 128 credits)	
Requirements for individuals with approximately 96 transfer credits:	
Education .....	2
English (not including freshman and sophomore English) <sup>1</sup> .....	6
Natural Science (as above) <sup>2</sup> .....	6
Social Science (as above) <sup>3</sup> .....	12
Electives (as many as needed to give a total of at least 128 credits)	

<sup>1</sup>If less than 12 credits were earned in English during the first two years of college, the deficiency must be made up in addition to the credits specified above.

<sup>2</sup>No more than four semester hours of science education and other approved substitutions for regular science courses will be counted toward the natural science requirements.

<sup>3</sup>If the transfer credits did not include at least 3 credits in American Government, 3 credits in sociology, philosophy, or economics, and 6 credits in American history, those deficiencies must be made up in addition to the 12 social science credits specified above.

## HOME ECONOMICS EDUCATION

The home economics education curriculum is designed for students who are preparing to teach vocational or general home economics or to engage in any phase of home economics work which requires a knowledge of teaching methods. It includes studies of all phases of home economics and the allied sciences, with professional training for teaching these subjects. A student majoring in this curriculum may also qualify for a science minor.

The offering includes both undergraduate and graduate programs leading to the degrees of Bachelor of Science, Master of Education, and Master of Science.

### HOME ECONOMICS EDUCATION CURRICULUM

	Semester	
	I	II
<i>Freshman Year</i>		
Ed. 1—Freshman Orientation <sup>1</sup> .....	0	0
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology .....	3	..
Chem. 11, 13 or Chem. 1, 3 .....	3-4	3-4
H. E. 1—Home Economics Orientation .....	0	..
Tex. 1—Textiles .....	..	3
Pr. Art 1—Design .....	3	..
Hea. 2—Personal Health (women) .....	2	..
Hea. 4—Community Health (women) .....	..	2
P. E. 2, 4 .....	1	1
G. & P. 1—American Government .....	..	3
Sp. 1—Public Speaking .....	..	3
Electives .....	1-2	..
Total .....	16-18	18-19
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education <sup>1</sup> .....	2	..
Eng. 3, 4—Composition and World Literature, or .....	3	3
Eng. 5, 6—Composition and English Literature .....	3	3
H. 5, 6—History of American Civilization .....	..	3
Pr. Art 20—Costume Design .....	3	..
Foods 2, 3—Foods <sup>2</sup> .....	3	3
Bot. 1—General Botany .....	..	4
P. E. 6, 8 .....	1	1
Electives <sup>3</sup> .....	1-2	..
Total .....	16-17	17

<sup>1</sup>May be taken either semester.

<sup>2</sup>Foods 52, 53 carries a prerequisite of Chem. 31, 32, 33, 34.

<sup>3</sup>Chem. 31, 32, 33, 34, Organic Chemistry, recommended as an elective or in lieu of General Botany for individuals with special interest in and need for Food and Nutrition.

	Semester	
	I	II
<i>Junior Year</i>		
H. E. Ed. 140—Curriculum, Instruction, and Observation . . . .	3	..
H. D. Ed. 100, 101—Principles of Human Development . . . .	3	3
Home Mgt. 150, 151—Home Management . . . . .	3	3
Foods 101—Meal Management . . . . .	2	..
Clo. 22—Clothing Construction . . . . .	..	2
Nut. 10 or 110—Elements of Nutrition . . . . .	..	3
Econ. 37—Fundamentals of Economics . . . . .	..	3
Zool. 1—General Zoology . . . . .	4	..
Electives . . . . .	2	3
Total . . . . .	17	17
<i>Senior Year*</i>		
H. E. Ed. 102—Problems in Teaching Home Economics . . . . .	3	..
Ed. 145—Principles and Methods of Secondary Education . . . .	3	..
H. E. Ed. 148—Teaching Secondary Vocational Home Economics . . . . .	8	..
Home Mgt. 152—Practice in Management of the Home . . . . .	3	..
Pr. Art 2—Survey of Art History or Clo. 128—Home Furnishings . . . . .	..	2-3
Microb. 1 or 51—Microbiology . . . . .	..	3-4
Electives . . . . .	..	6
Total . . . . .	17	11-13

## INDUSTRIAL EDUCATION

Three curriculums are administered by the Industrial Education Department: (1) Industrial Arts Education, (2) Vocational-Industrial Education, and (3) Education for Industry. The overall offering includes both undergraduate and graduate programs leading to the degrees of: Bachelor of Science, Master of Education, Master of Arts, Doctor of Education, and Doctor of Philosophy.

The industrial arts education curriculum prepares persons to teach industrial arts at the secondary school level. It is a four-year program leading to a Bachelor of Science degree. While trade or industrial experience contributes significantly to the background of the industrial arts teacher, previous work experience is not a condition of entrance into this curriculum. Students who are enrolled in the curriculum are encouraged to obtain work in industry during the summer months. Industrial arts as a secondary school subject area is a part of the general education program characterized by extensive shopwork and laboratory experiences.

The vocational-industrial curriculum may lead either to certification as a vocational-industrial teacher with no degree involved or to a Bachelor of Science

\*Subjects in the senior year will be so arranged that the two semesters may be interchanged.

## Industrial Education Curriculum

degree, including certification. The University of Maryland is designated as the institution which shall offer the "Trade and Industrial" certification courses and hence the courses which are offered are those required for certification in Maryland. The vocational-industrial curriculum requires trade competence as specified by the *Maryland State Plan for Vocational Education*. A person who aspires to take the certification courses should review the state plan and may well contact Maryland State Department of Education officials. If the person has in mind teaching in a designated city or county he may discuss his plans with the vocational-industrial official of that city or county inasmuch as there are variations in employment and training procedures.

### INDUSTRIAL ARTS EDUCATION CURRICULUM

	Semester	
	I	II
<b>Freshman Year</b>		
Ed. 1—Freshman Orientation <sup>1</sup> .....	0	0
Eng. 1, 2—Composition and American Literature .....	3	3
Sp. 1—Public Speaking .....	..	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology ....	3	..
G. & P. 1—American Government <sup>1</sup> .....	..	3
Ind. Ed. 1—Mechanical Drawing .....	2	..
Ind. Ed. 34—Graphic Arts I .....	..	3
Ind. Ed. 2—Elementary Woodworking .....	2	..
Ind. Ed. 22—Machine Woodworking I .....	..	2
Ind. Ed. 12—Shop Calculations <sup>1</sup> .....	3	..
A. S. 1, 2—Basic Air Science (men) .....	2	2
P. E. 1, 3—Physical Activities .....	1	1
Total .....	16	17
<b>Sophomore Year</b>		
Ed. 2—Introduction to Education <sup>1</sup> .....	2	..
Eng. 3, 4—Composition and World Literature, or .....	3	3
Eng. 5, 6—Composition and English Literature .....		
H. 5, 6—History of American Civilization .....	3	3
Ind. Ed. 21—Mechanical Drawing .....	2	..
Ind. Ed. 28—Electricity I .....	..	2
Ind. Ed. 26—General Metal Work .....	3	..
Chem. 1, 3—General Chemistry .....	4	4
Math. 10—Algebra .....	..	3
A. S. 3, 4—Basic Air Science (men) .....	2	2
P. E. 5, 7—Physical Activities .....	1	1
Total .....	20	18
<b>Junior Year</b>		
H. D. Ed. 100, 101—Principles of Human Development ....	3	3
Phys. 1, 2—Elements of Physics .....	3	3

<sup>1</sup>May be taken either semester.



<i>Junior Year (continued)</i>	<i>(Semester)</i>	
	I	II
Ind. Ed. 41—Architectural Drawing .....	2	..
Ind. Ed. 48—Electricity II .....	..	2
Ind. Ed. 33—Automotives I .....	3	..
Ind. Ed. 160—Essentials of Design .....	..	2
Ind. Ed. 164—Shop Organization and Management .....	..	2
Ind. Ed. 166—Educational Foundations of Industrial Arts ....	2	..
Ed. 161—Principles of Guidance .....	..	3
Electives—(shopwork and/or drafting) <sup>1</sup> .....	2	2
Electives—(unspecified) .....	2	2
Total .....	17	19

*Senior Year*

Ind. Ed. 140—Curriculum, Instruction and Observation, Industrial Education .....	3	..
Ind. Ed. 148—Student Teaching in Secondary Schools .....	8	..
Ed. 145—Principles and Methods of Secondary Education ....	3	..
Ind. Ed. 23—Arc and Gas Welding .....	..	1
Ind. Ed. 69—Machine Shop Practice I .....	..	3
Ind. Ed. 105—General Shop .....	..	2
Ind. Ed. 110—Foundry .....	..	1
Econ. 37—Fundamentals of Economics .....	..	3
Electives—(shopwork and/or drafting) <sup>1</sup> .....	..	4
Electives—(professional courses) .....	..	5
Total .....	14	19

## VOCATIONAL-INDUSTRIAL

The vocational-industrial curriculum is a four-year program of studies leading to a Bachelor of Science degree in education. It is intended to develop the necessary competencies for the effective performance of the tasks of a vocational teacher. In addition to establishing the adequacy of the student's skills in a particular trade and the development of instructional efficiency, the curriculum aims at the professional and cultural development of the individual. Courses are included which would enrich the persons scientific, economic, psychological and sociological understandings. The vocational-certification courses for the state of Maryland are a part of the curriculum requirements.

Persons pursuing this curriculum must present documentary evidence of having an apprenticeship or comparable learning period and journeyman experience. This evidence of background and training is necessary in order that the trade examination phase of the curriculum may be accomplished.

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<sup>1</sup>After the student has completed the basic courses in drafting, woodworking, metal-working, graphic arts and automotives he is to select advanced courses in one or more of these areas as advised.

## Industrial Education Curriculum

Persons having completed the necessary certification courses prior to working on the degree program may use such courses toward meeting graduation requirements. However, after certification course requirements have been met, persons continuing studies toward a degree must take courses in line with the curriculum plan and University regulations. (e.g.) junior level courses cannot be taken until the student has reached full junior standing as set forth in the academic regulations for the University.

	Semester	
	I	II
<b>Freshman Year</b>		
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life .....	3	..
G. & P. 1—American Government .....	..	3
Sp. 1—Public Speaking .....	3	..
Ind. Ed. 12—Shop Calculations .....	3	..
Math. 10—Algebra .....	..	3
A. S. 1, 2—Basic Air Science (men) .....	2	2
P. E. 1, 3—Physical Activities .....	1	1
Total .....	15	12

### Sophomore Year

H. 5, 6—History of American Civilization .....	3	3
Eng. 3, 4—Composition and World Literature or		
Eng. 5, 6—Composition and English Literature .....	3	3
Math. 11—Trigonometry and Analytic Geometry .....	3	..
Phys. 1, 2—Elements of Physics .....	3	3
Econ. 37—Fundamentals of Economics .....	..	3
A. S. 3, 4—Basic Air Science (men) .....	2	2
P. E. 5, 7—Physical Activities .....	1	1
Total .....	15	15

Note: The trade examination (20 semester hours) should be taken prior to entering the fifth semester of work. See regulations covering examination, page 28.

### Junior Year

H. D. Ed. 100, 101—Principles of Human Development .....	3	3
Chem. 1, 3—General Chemistry .....	4	4
Ind. Ed. 170—Principles of Vocational Education or		
Ind. Ed. 171—History of Vocational Education .....	2	..
Ind. Ed. 168—Trade or Occupational Analysis .....	..	2
Ed. 161—Principles of Guidance .....	3	..
Ed. 150—Educational Measurements .....	..	2
Ind. Ed. 165—Modern Industry .....	..	3
Soc. 115—Industrial Sociology .....	3	..
Electives .....	..	5
Total .....	15	19

<i>Senior Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
Ind. Ed. 140—Curriculum, Instruction and Observation . . . . .	3	..
Ind. Ed. 148—Student Teaching in Secondary Schools . . . . .	8	..
Ed. 145—Principles and Methods of Secondary Education . . . .	3	..
Ind. Ed. 169—Course Construction . . . . .	..	2
Econ. 160—Labor Economics . . . . .	..	3
Ind. Ed. 150—Training Aids Development . . . . .	..	3
Ind. Ed. 164—Shop Organization and Management . . . . .	..	2
Electives . . . . .	..	4
<b>Total . . . . .</b>	<b>14</b>	<b>14</b>

**STUDENT TEACHING REQUIREMENT.**—Persons currently teaching in the secondary schools with three or more years of satisfactory experience at that level are not required to take Ind. Ed. 148—Student Teaching in Secondary Schools. Evidence of satisfactory teaching experience shall be presented in the form of written statements from the principal, area supervisor, and department head in the school where such teaching is done. Instead of the eight (8) credits required for student teaching, the individual meeting the above qualifications will have eight (8) additional semester hours of elective credits.

**ELECTIVE CREDITS.**—Courses in history and philosophy of education, sociology, speech, psychology, economics, business administration, and other areas may be taken with the permission of the student's adviser.

Elective courses in the technical area (shop and drawing) will be limited to courses and subjects not covered in the trade training experience. Courses dealing with advanced technology and recent improvements in field practices will be acceptable.

#### VOCATIONAL-INDUSTRIAL CERTIFICATION

A total of 240 clock hours of instruction is required for vocational-industrial teacher certification. The courses listed below are currently required:

- Ind. Ed. 50—Methods of Teaching
- Ind. Ed. 60—Observation and Demonstration Teaching
- Ind. Ed. 164—Shop Organization and Management
- Ind. Ed. 168—Trade or Occupational Analysis
- Ind. Ed. 169—Course Construction
- Ind. Ed. 170—Principles of Vocational Education, and/or
- Ind. Ed. 171—History of Vocational Education

"The remainder of the 240 clock hours are to be met through elective industrial education courses offered by the University of Maryland and approved by the State Supervisor of Industrial Education."\* The courses from which electives may be chosen are:

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\*Maryland (State Department of Education). The Maryland State Plan for Vocational Education 1947-1952, p. 108.

## Industrial Education Curriculum

- Ind. Ed. 150—Training Aids Development
- Ind. Ed. 157—Tests and Measurements
- Ind. Ed. 161—Principles of Vocational Guidance
- Ind. Ed. 165—Modern Industry
- Ind. Ed. 167—Problems in Occupational Education
- \*Ind. Ed. 220—Organization, Administration and Supervision of Vocational Education
- Ind. Ed. 240—Research in Industrial Arts and Vocational Education
- Ind. Ed. 248—Seminar in Industrial Arts and Vocational Education
- Ed. 150—Educational Measurement
- Ed. 160—Educational Sociology
- Ed. 161—Principles of Guidance
- Ed. 253—Guidance Information
- Ed. 261—Practicum in School Counseling
- Ed. 269—Seminar in Guidance

A person in vocational-industrial education may use his certification courses toward a Bachelor of Science degree. In doing so the general requirements of the University and College of Education must be met. A maximum of twenty semester hours of credit may be earned through examination in the trade in which the student has competence. Prior to taking the examination, the student shall provide documentary evidence of his apprenticeship or learning period and journeyman experience. For further information about credit by examination refer to the publication *University General and Academic Regulations*.

### EDUCATION FOR INDUSTRY

The Education for Industry curriculum is a four-year program leading to a Bachelor of Science degree. The purpose of the program is to prepare persons for jobs within industry and, as such it embraces four major areas of competence, (a) technical competence, (b) human relations and leadership competence, (c) communications competence, and (d) social and civic competence. The student who is enrolled in this curriculum is required to obtain work in industry in accordance with the plan described in the course, Industrial Education 124, a, b.

Freshman Year	Semester	
	I	II
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life <sup>1</sup> .....	3	..
G. & P. 1—American Government <sup>1</sup> .....	..	3
Ind. Ed. 1—Mechanical Drawing .....	2	..
Ind. Ed. 12—Shop Calculations .....	3	..
Ind. Ed. 21—Mechanical Drawing .....	..	2
Ind. Ed. 22—Machine Woodworking I .....	2	..
Ind. Ed. 23—Arc and Gas Welding .....	..	1

\*A course bearing a "200" number is open only to graduate students.

<sup>1</sup>May be taken either semester.

(Semester)

I      II

*Freshman Year (continued)*

Ind. Ed. 69—Machine Shop Practice I .....	..	3
Ind. Ed. 110—Foundry .....	..	1
Sp. 7—Public Speaking .....	2	..
A. S. 1, 2—Basic Air Science (men) .....	2	2
P. E. 1, 3—Physical Activities .....	1	1
Math. 10—Algebra .....	..	3
Total .....	18	19

*Sophomore Year*

Eng. 3, 4—Composition and World Literature or .....	3	3
Eng. 5, 6—Composition and English Literature .....	..	..
Ind. Ed. 24—Sheet Metal Work .....	2	..
B. A. 10, 11—Organization and Control .....	2	2
Phys. 1, 2—Elements of Physics or .....	..	..
Phys. 10, 11—Fundamentals of Physics .....	3 or 4	3 or 4
Math. 11—Trigonometry and Analytic Geometry .....	2	..
A. S. 3, 4—Basic Air Science (men) .....	2	2
P. E. 5, 7—Physical Activities .....	1	1
H. 5—History of American Civilization .....	..	3
Econ. 37—Fundamentals of Economics .....	..	3
Total .....	15 or 16	17 or 18

*Junior Year*

H. 6—History of American Civilization .....	3	..
Psych. 1—Introduction to Psychology .....	3	..
Psych. 2—Applied Psychology .....	..	3
Chem. 1, 3—General Chemistry .....	4	4
Econ. 160—Labor Economics .....	3	..
Ind. Ed. 124a—Organized and Supervised Work Experience <sup>1</sup> ..	3	..
Ind. Ed. 143, 144—Industrial Safety Education .....	2	2
B. A. 160—Personnel Management .....	..	3
Soc. 115—Industrial Sociology .....	..	3
Electives .....	3	3
Total .....	21	18

*Senior Year*

B. A. 163—Industrial Relations .....	3	..
B. A. 167—Job Evaluation and Merit Rating .....	2	..
Ind. Ed. 124b—Organized and Supervised Work Experience <sup>1</sup> ..	3	..
Ind. Ed. 164—Shop Organization and Management .....	..	2
Ind. Ed. 165—Modern Industry .....	..	3
Ind. Ed. 168—Trade or Occupational Analysis .....	2	..
Psych. 161—Industrial Psychology .....	..	3
Electives .....	5	8
Total .....	15	16

<sup>1</sup>Must be pursued concurrently with the regular summer sessions between the sophomore and junior and the junior and senior years respectively.



## MUSIC EDUCATION

The music education curriculum affords pre-service preparation in the specialized field of music education and leads to the degree of Bachelor of Science in education with a major in public school music. The curriculum provides training in both the choral and instrumental fields of music and is planned to meet the growing demand for special teachers and supervisors in those areas. In the junior and senior years the student may elect either the vocal option or the instrumental option.

A minor in the field may be received with 24 semester hours in music education, theory, and history; 8 semester hours in applied music; two semester hours in ensemble; Mus. Ed. 129 or 132; and student teaching divided between the student's major and minor fields. The 24 specified hours must include Music 1, 7, 8, 70, 80 or 81, 121, and 160 or 161.

### MUSIC EDUCATION CURRICULUM

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Ed. 1—Freshman Orientation .....	0	..
Sp. 4—Voice and Diction.....	3	..
Music 1—Introduction to Music .....	..	3
Music 7, 8—Theory of Music .....	3	3
Music 12, 13—Applied Music (principal instrument) .....	2	2
Music 23, 24—Class Piano <sup>1</sup> .....	2	2
Physical Activities .....	1	1
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc. ....	1	1
A. S. 3, 4 (men) or Hea. 2, 4 (women) .....	2-2	2-2
Total .....	17	17
<i>Sophomore Year</i>		
Eng. 3, 4, or 5, 6—Composition and Literature .....	3	3
Mathematics or Science .....	3	3
Ed. 2—Introduction to Education .....	2	..
Music 52, 53—Applied Music (principal instrument) .....	2	2
Music 70, 71—Harmony .....	4	4
Music 21—Class Voice <sup>2</sup> .....	..	2
Physical Activities .....	1	1
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc. ....	1	1
A. S. 3, 4 (men)—Basic Air Science .....	2	2
Total .....	18	18

<sup>1</sup>Piano majors take Music 33, 34, Advanced Class Piano.

<sup>2</sup>Voice majors take Music 33, Advanced Class Piano.

	Semester	
	I	II
<i>Junior Year—Vocal Option</i>		
H. D. Ed. 100, 101—Principles of Human Development....	3	3
H. 5, 6—History of American Civilization.....	3	3
Music 22—Class Voice <sup>1</sup> .....	2	..
Music 31—Advanced Class Voice.....	..	2
Music 80—Class Study of Strings.....	2	..
Music 112, 113—Applied Music (principal instrument).....	2	2
Music 121—History of Music .....	..	3
Music 160—Conducting .....	2	..
Ed. 145—Principles of High School Teaching.....	3	..
Mus. Ed. 139—Music for the Elem. School Specialist .....	..	2
Mus. Ed. 132—Music in the Secondary School .....	..	2
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.....	1	1
Total.....	18	18
<i>Senior Year—Vocal Option</i>		
Soc. 1—Sociology of American Life or Phil. 1—Philosophy of Modern Man or Psych. 1—Introduction to Psychology <sup>2</sup> ....	3	..
G. & P. 1—American Government.....	3	..
Music 32—Advanced Class Voice.....	2	..
Music 81—Class Study of Winds.....	2	..
Music 120—History of Music.....	3	..
Music 147—Orchestration .....	2	..
Music 152—Applied Music (principal instrument).....	2	..
Ed. 148, 149—Practice Teaching .....	..	8
Mus. Ed. 173—Vocal Music Teacher and School Organization .....	..	2
Music 161—Conducting .....	..	2
Electives .....	..	3
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.....	1	1
Total.....	18	16
<i>Junior Year—Instrumental Option</i>		
H. D. Ed. 100, 101—Principles of Human Development....	3	3
H. 5, 6—History of American Civilization.....	3	3
Music 22—Class Voice .....	2	..
Music 80, 82—Class Study of Strings.....	2	2
Music 160, 161—Conducting .....	2	2
Music 112—Applied Music (principal instrument).....	..	2
Music 121—History of Music.....	..	3
Ed. 145—Principles of High School Teaching.....	3	..
Music 147—Orchestration .....	2	..
Mus. Ed. 132—Music in the Secondary School .....	..	2
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.....	1	1
Total.....	18	18

<sup>1</sup> Voice majors take Music 34, Advanced Class Piano.

<sup>2</sup> Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3).

	Semester	
	I	II
<i>Senior Year—Instrumental Option</i>		
G. & P. 1—American Government.....	3	..
Soc. 1—Sociology of American Life or Phil. 1—Philosophy of Modern Man or Psych. 1—Introduction to Psychology <sup>1</sup> ....	3	..
Music 81, 83—Class Study of Winds.....	2	2
Music 120—History of Music.....	3	..
Mus. Ed. 129—Instrumental Methods .....	2	..
Music 113, 152—Applied Music (principal instrument)....	2	2
Ed. 148, 149—Practice Teaching.....	..	8
Mus. Ed. 163—Band Techniques and Administration .....	2	..
Electives .....	..	3
Music 4, 5, 6, 10, or 15—Band, Orchestra, Chorus, etc.....	1	1
Total.....	18	16

## PHYSICAL EDUCATION AND HEALTH EDUCATION

### PHYSICAL EDUCATION

This curriculum prepares students (1) for teaching physical education in the secondary schools, (2) for coaching, and (3) for leadership in youth and adult groups which offer a program of physical activity. The first two years of this curriculum will be an orientation period in which the student has an opportunity to gain an adequate background in general education as well as in those scientific areas closely related to this field of specialization. In addition, there is considerable emphasis placed upon the development of skills in a wide range of motor activities. This basic training makes it possible for the student to select related areas, especially in the fields of biology, health education, and recreation as fields of secondary interest. These materially increase the vocational opportunities which are available to a graduate in physical education.

### PHYSICAL EDUCATION CURRICULUM FOR MEN

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology <sup>2</sup> ..	3	..
G. & P. 1—American Government <sup>3</sup> .....	..	3
Zool. 1—General Zoology.....	..	4
Sp. 7—Public Speaking.....	2	..
P. E. 30—Introduction to Physical Education, Recreation, and Health .....	2	..
P. E. 50—Rhythmic Analysis and Movement.....	1	..

<sup>1</sup> Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3).

<sup>2</sup> Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

<sup>3</sup> May be taken either semester.

	Semester	
	I	II
<i>Freshman Year*</i> (Continued)		
P. E. 59—Skills in Folk, Square and Social Dance.....	..	1
P. E. 61, 63—Sport Skills and Gymnastics.....	2	2
A. S. 1, 2—Basic Air Science.....	2	2
Electives .....	1	4
Total.....	16	19
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Physical Science Group Requirement (mathematics, physics or chemistry) .....	3-4	..
Hea. 40—Personal and Community Health .....	..	3
P. E. 65, 67—Sport Skills and Gymnastics .....	2	2
A. S. 3, 4—Basic Air Science .....	2	2
Electives .....	1	1
Total .....	18-19	18
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
P. E. 77—Methods of Teaching Aquatics .....	..	2
P. E. 100—Kinesiology .....	4	..
P. E. 101, 103—Organization and Officiating in Intramurals..	1	1
P. E. 113, 115—Methods and Materials for Secondary Schools	3	1
P. E. 123 or 125—Coaching Athletics .....	3	..
P. E. 180—Measurement in Physical Education and Health..	..	3
Hea. 50—First Aid and Safety .....	..	1
Electives (See Note 2).....	5	8
Total .....	19	19
<i>Senior Year</i>		
P. E. 140—Curriculum, Instruction and Observation.....	..	3
P. E. 160—Theory of Exercise.....	3	..
P. E. 190—Administration and Supervision of Physical Education, Recreation, and Health.....	..	3
Ed. 145—Principles and Methods of Secondary Education....	..	3
Ed. 148—Student Teaching in Secondary Schools <sup>1</sup> .....	..	8
Electives <sup>2</sup> .....	15	..
Total.....	18	17

\*Students classified in Group 3 on Mathematics Entrance Test must take Math. 0. P. E. 71 may be required, depending upon swimming ability of student.

<sup>1</sup>May be taken either semester. The qualified student may register for 4 credits of Ed. 148 and 4 credits of Ed. 149 (Student Teaching in Elementary Schools). When Ed. 148 is scheduled, Ed. 145, P. E. 140, and P. E. 190 must be scheduled concurrently.

<sup>2</sup>Every student in junior or senior year must elect either Hea. 120, P. E. 120 or Rec. 170.

# Physical Education Curriculum

## PHYSICAL EDUCATION CURRICULUM FOR WOMEN

	Semester	
	I	II
<i>Freshman Year*</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy For Modern Man or Psych. 1—Introduction to Psychology <sup>1</sup>	3	..
G. & P. 1—American Government <sup>2</sup> .....	..	3
Zool. 1—General Zoology .....	..	4
Sp. 7—Public Speaking.....	2	..
P. E. 30—Introduction to Physical Education, Recreation, and Health .....	2	..
P. E. 40—Basic Body Controls .....	1	..
P. E. 50—Rhythmic Analysis and Movement .....	2	..
P. E. 52—Dance Techniques .....	..	1
P. E. 56—Skills and Methods in Folk and Square Dance ..	..	1
P. E. 62, 64—Elementary Techniques of Sports and Gymnastics .....	2	2
Electives .....	..	2
Total .....	15	16
<i>Sophomore Year**</i>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Physical Science Group Requirement—(mathematics, physics or chemistry) .....	3-4	..
Hea. 40—Personal and Community Health .....	..	3
P. E. 54—Dance Techniques .....	1	..
P. E. 58—Skills and Methods in Social Dance .....	1	..
P. E. 60—Dance Composition .....	..	2
P. E. 66, 68—Techniques of Sports .....	2	2
Total .....	17-18	17
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
P. E. 78—Methods of Teaching Aquatics.....	..	2
P. E. 82, 84—Officiating <sup>3</sup> .....	0	0
P. E. 100—Kinesiology .....	4	..

\*P. E. 72 may be required, depending upon swimming ability of student.

Students classified in Group 3 in Mathematics Entrance Test must take Math. 0.

\*\*P. E. 74 and/or 76 may be required, depending upon swimming ability of student.

<sup>1</sup>Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

<sup>2</sup>May be taken either semester.

<sup>3</sup>Students must hold one officials rating to be eligible for student teaching.



	Semester	
	I	II
<i>Junior Year (Continued)</i>		
P. E. 114, 116—Methods in Physical Education for Secondary Schools .....	3	1
P. E. 124, 126—Practicum in Leadership.....	2	2
P. E. 180—Measurement in Physical Education and Health	3	..
Hea. 50—First Aid and Safety.....	..	1
Electives <sup>1</sup> .....	..	7
	<hr/>	<hr/>
Total.....	15	16
<i>Senior Year</i>		
P. E. 140—Curriculum, Instruction and Observation.....	..	3
P. E. 160—Theory of Exercise.....	3	..
P. E. 190—Administration and Supervision of Physical Education, Recreation, and Health.....	..	3
Ed. 145—Principles and Methods of Secondary Education....	..	3
Ed. 148—Student Teaching in Secondary Schools <sup>2</sup> .....	..	8
Electives <sup>1</sup> .....	12	..
	<hr/>	<hr/>
Total.....	15	17

*Minor in Physical Education*—20 semester hours in physical education and 4 semester hours in cognate areas.

*Required Courses*—Men—P. E. 30; P. E. 61, 63, 65, 67, (2-6\*); P. E. 113; P. E. 101 or 103.

*Women*—P. E. 30; P. E. 62, 64, 66, 68, (2-6\*); P. E. 114, 116; P. E. 124, 126.

*Elective Courses*—Men and Women—P. E. 78, 100; P. E. 123; P. E. 125; P. E. 140; P. E. 160; P. E. 180; P. E. 190; Hea. 110; Hea. 120; Rec. 30; Rec. 40; Rec. 100; Rec. 150; Rec. 170.

If planning to teach, the cognate courses for men should be Hea. 40 and Hea. 50; for women, Hea. 50 and Hea. 120. Men should include P. E. 123 or P. E. 125 if planning to coach.

Note: To be certified to teach in Maryland, 30 semester hours are required in this area, including the following or equivalent: Zool. 14, 15; Hea. 50; P. E. 100, 140; Ed. 145 and Ed. 148 including at least 25 hours of student teaching.

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\*Selection of courses will be made according to student's background and interests upon consultation with the physical education adviser.

<sup>1</sup>Every student in junior or senior year must elect either Hea. 120, P. E. 120, or Rec. 170.

<sup>2</sup>May be taken either semester. The qualified student may register for 4 credits of Ed. 148 and 4 credits of Ed. 149 (Student Teaching in Elementary Schools). When Ed. 148 is taken, Ed. 145, P. E. 140, and P. E. 190 must be scheduled concurrently.

MINOR IN ELEMENTARY SCHOOL PHYSICAL EDUCATION

Men and women physical education major students who desire to prepare for positions in elementary school physical education should take 13 semester hours in elementary school physical education courses and 10 hours in cognate areas. *Required courses*—P.E. 55, 57, 120, 130, 195. *Elective courses*—10 hours in any of the following cognate areas: human development, elementary education, biological science, health education. (Not more than 6 hours shall be taken in any one cognate area.)

HEALTH EDUCATION

This curriculum is designed to prepare the student to give leadership in the development of the school health education program including (1) health services (2) healthful environment, and (3) health teaching. Graduates in this area have placement opportunities in schools, colleges, and in public and private health agencies. The minor is planned to be particularly suitable for students who are majoring in physical education, education, home economics, and childhood education.

HEALTH EDUCATION CURRICULUM FOR MEN

Freshman Year	Semester	
	I	II
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy of Modern Man or Psych. 1—Introduction to Psychology <sup>1</sup>	3	..
G. & P. 1—American Government <sup>2</sup> .....	..	3
Zool. 1—General Zoology .....	..	4
Sp. 7—Public Speaking .....	2	..
Hea. 10—Orientation to Health Education.....	..	1
Hea. 30—Introduction to Physical Education, Recreation and Health .....	2	..
P. E. 1—Orientation to Physical Education .....	1	..
P. E. 3—Developmental and Combative Sports .....	..	1
Chem. 11, 13—General Chemistry .....	3	3
A. S. 1, 2—Basic Air Science .....	2	2
Electives .....	1	1
Total .....	17	18

<sup>1</sup> Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

<sup>2</sup> May be taken either semester.

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Hea. 40—Personal and Community Health .....	3	..
Hea. 50—First Aid and Safety .....	..	1
Hea. 70—Safety Education .....	..	3
P. E. 5—Team Sports & Aquatics .....	1	..
P. E. 7—Recreational Activities .....	..	1
A. S. 3, 4—Basic Air Science .....	2	2
Electives .....	3	1
Total .....	19	18
<i>Junior Year</i>		
Microb. 1—General Microbiology .....	4	..
Microb. 108—Epidemiology and Public Health .....	..	4
Nut. 10—Elements of Nutrition .....	..	3
Ed. 150—Educational Measurement or Hea. 180—Measurement in Physical Education and Health .....	2-3	..
Hea. 110—Introduction to School Health Education .....	2	..
Hea. 120 Methods and Materials in Health Education .....	..	3
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
Psych. 1—Introduction to Psychology .....	3	..
Psych. 5—Mental Hygiene .....	..	3
Electives .....	3	2
Total .....	17-18	18
<i>Senior Year</i>		
Hea. 140—Curriculum, Instruction and Observation .....	3	..
Hea. 150—Health Problems of the School Child .....	..	3
Hea. 190—Administration and Supervision of School Health Education .....	3	..
Ed. 145—Principles and Methods of Secondary Education ....	3	..
Ed. 148—Student Teaching in Secondary Schools <sup>1</sup> .....	8	..
Electives .....	..	14
Total .....	17	17

<sup>1</sup>May be taken either semester. When Ed. 148 is taken, Ed. 145, Hea. 140 and Hea. 190 must be scheduled concurrently.

HEALTH EDUCATION CURRICULUM FOR WOMEN

	Semester	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology <sup>1</sup>	3	..
G. & P. 1—American Government <sup>2</sup> .....	..	3
Zool. 1—General Zoology .....	..	4
Sp. 7—Public Speaking .....	2	..
Hea. 10—Orientation to Health Education.....	..	1
Hea. 30—Introduction to Physical Education, Recreation and Health .....	2	..
P. E. 2, 4—Orientation Activities and Swimming .....	1	1
Chem. 11, 13—General Chemistry .....	3	3
Electives .....	3	3
Total .....	17	18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Hea. 40—Personal and Community Health .....	3	..
Hea. 50—First Aid and Safety .....	..	1
Hea. 70—Safety Education .....	..	3
P. E. 6, 8—Dance and Sports .....	1	1
Electives .....	3	3
Total .....	17	18
<i>Junior Year</i>		
Microb. 1—General Microbiology .....	4	..
Microb. 108—Epidemiology and Public Health .....	..	4
Nut. 10—Elements of Nutrition .....	..	3
Ed. 150—Educational Measurement or Hea. 180—Measurement in Physical Education and Health .....	2-3	..
Hea. 110—Introduction to School Health Education.....	2	..
Hea. 120—Methods and Materials in Health Education.....	..	3
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
Psych. 1—Introduction to Psychology .....	3	..
Psych. 5—Mental Hygiene .....	..	3
Electives .....	3	2
Total.....	17-18	18

<sup>1</sup>Or Econ. 31—Principles of Economics (3) or Econ. 37—Fundamentals of Economics (3) in the sophomore year.

<sup>2</sup> May be taken either semester.

Senior Year	Semester	
	I	II
Hea. 140—Curriculum, Instruction and Observation .....	3	..
Hea. 150—Health Problems of the School Child .....	..	3
Hea. 190—Administration and Supervision of School Health Education .....	3	..
Ed. 145—Principles and Methods of Secondary Education ....	3	..
Ed. 148—Student Teaching in Secondary Schools <sup>1</sup> .....	8	..
Electives .....	..	14
Total .....	17	17

*Minor in Health Education*—12 semester hours in Health Education and 12 semester hours in related areas.

*Required Courses*—Hea. 2 and 4, or Hea. 40 (women); Hea. 40 (men); Hea. 50 (1), Hea. 110 (2), Hea. 120 (3) and Hea. 150 (3).

*Elective Courses in related areas*—6 semester hours of biological sciences and 6 semester hours of psychology or human development.

*Minor in Safety Education*—Students wishing to obtain a minor in safety education and become certified to teach Safety and Driver Education in junior and senior high schools should take the following courses Hea. 50 (1), Hea. 60 (2), Hea. 70 (3), Hea. 80 (3), Hea. 105 (3); Hea. 145 (3); F. P. 13 (3), 22 (3).

<sup>1</sup>May be taken either semester. When Ed. 148 is taken, Ed. 145, Hea. 140 and Hea. 190 must be scheduled concurrently.



## COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students has registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

A course with a single number extends through one semester. A course with a double number extends through two semesters. The number of credit hours is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

## EDUCATION

### *Courses Primarily for Freshmen and Sophomores*

*Ed. 1. Freshman Orientation. (0)*

Required of all freshmen.

*Ed. 2. Introduction to Education. (2)*

First and second semesters. Required of sophomores in Education. Section 1—Elementary; Section 2—Secondary. Laboratory fee, \$1.00. An exploratory course designed to introduce students to responsibilities of teachers for understanding their pupils, the way learning takes place, the need for planning, types of competencies needed, and certification requirements. (Risinger, O'Neill, Grambs.)

*Ed. 6. Observation of Teaching. (1)*

Twenty hours of directed observation. Reports, conferences, and criticisms.

*Ed. 52. Children's Literature. (2-3)*

First and second semesters. Prerequisites, Eng. 1, 2. A study of literary values in prose and verse for children. (Bryan.)

*Ed. 90. Development and Learning. (3)*

A study of the principles of learning and their application to school situations. Designed to meet the usual teacher-certification requirement for educational psychology.

### *For Advanced Undergraduates and Graduates*

*Ed. 100. History of Education in Western Civilization. (3)*

Educational institutions through the ancient, mediaeval, and early modern periods in the western civilization, as seen against a background of socio-economic development. (Wiggin.)

*Ed. 102. History of Education in the United States. (3)*

A study of the origins and development of the chief features of the present system of education in the United States. (Wiggin.)

*Ed. 107. Philosophy of Education. (2-3)*

A study of the great educational philosophers and systems of thought affecting the development of modern education. (Wiggin.)

*Ed. 121. The Language Arts in the Elementary School. (2-3)*

Teaching of spelling, handwriting, oral and written expression, and creative expression. Special emphasis given to skills having real significance to pupils.

*Ed. 122. The Social Studies in the Elementary School. (2-3)*

Consideration given to curriculum, organization and methods of teaching, evaluation of newer materials, and utilization of environmental resources. (O'Neill.)

*Ed. 123. The Child and the Curriculum. (3)*

Relationship of the elementary school curriculum to child growth and development. Recent trends in curriculum organization; the effect of environment on learning; readiness to learn; and adapting curriculum content and methods to maturity levels of children. (Denecke.)

*Ed. 124. Arithmetic in the Elementary School. (2-3)*

Emphasis on materials and procedures which help pupils sense arithmetical meanings and relationships. Helps teachers gain a better understanding of the number system and arithmetical processes. (Schindler.)

*Ed. 125. Art in Elementary Schools. (2)*

Concerned with art methods and materials for elementary schools. Includes laboratory experiences with materials appropriate for elementary schools. (Lembach.)

*Ed. 127. Teaching in Elementary Schools. (2-6)*

An overview of elementary school teaching designed for individuals without specific preparation for elementary school teaching or for individuals without recent teaching experience.

*Ed. 130. The Junior High School. (2-3)*

A general overview of the junior high school. Purposes, functions and characteristics of this school unit; a study of its population, organization, program of studies, methods, staff, and other similar topics, together with their implications for prospective teachers.

*Ed. 133. Methods of Teaching Social Studies in Secondary School. (2-3)*

Designed to give practical training in the everyday teaching situations. Use of various lesson techniques, audio and visual aids, reference materials, and testing programs and the adaption of teaching methods to individual and group differences. Present tendencies and aims of instruction in the social studies. (Risinger.)

*Ed. 134. Materials and Procedures for the Secondary School Core Curriculum. (3)*

Laboratory fee, \$1.00. This course is designed to bring practical suggestions to teachers who are in charge of core classes in junior and senior high schools. Materials and teaching procedures for specific units of work are stressed. (Staff.)

## Education

### Ed. 137. *Methods of Teaching Mathematics and Science in Secondary School.* (2-3)

Laboratory fee, \$2.00. Considers such topics as objectives, selection, organization, and presentation of subject matter, appropriate classroom methods and procedures, instructional materials and evaluation of learning experiences in the areas of mathematics, the physical sciences, and the biological sciences. (Ulry, Mayor.)

### Ed. 140. *Curriculum, Instruction, and Observation.* (3)

First and/or second semesters. Offered in separate sections for the various subject matter areas, namely, English, social studies, foreign language, science, mathematics, art education, business education, industrial education, music education, and physical education. Registration cards must include the subject-matter area as well as the name and number of the course. Graduate credit is allowed only by special arrangement. The objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks, and other instructional materials, measurement, and other topics pertinent to the particular subject matter area are treated. Twenty periods of observation. (Staff.)

### Ed. 141. *Methods of Teaching English in Secondary Schools.* (3)

Content and method in teaching the English language arts. (Bryan.)

### Ed. 142. *Oral-aural Method in Teaching Foreign Languages.* (3)

Graduate credit allowed by special arrangement and adviser's approval. Designed for high school teachers. Methods in making and using tape recordings, using electronic laboratories, developing oral-aural skills and direct approach to language teaching are emphasized. (Staff.)

### Ed. 143. *Foreign Language Methods in Elementary Schools.* (3)

Graduate credit allowed by special arrangement and adviser's approval. Registration limited and based upon approval of adviser. Methods and techniques for developmental approach to the teaching of modern foreign languages in elementary schools. Use of realia, development of oral-aural skills and understanding of young children in language development are stressed. (Staff.)

### Ed. 145. *Principles and Methods of Secondary Education.* (2-3)

First and second semesters; summer session. This course is concerned with the principles and methods of teaching in junior and senior high schools. Instructional problems common to all of the subject fields are considered in relation to the needs and interests of youth, the urgent social problems of today, and the central values to which our society is committed. (McClure, Grambs, Risinger.)

### Ed. 147. *Audio-Visual Education.* (3)

First semester and summer session. Laboratory fee, \$1.00. Sensory impressions in their relation to learning projection apparatus, its cost and operation; slides, film-strips, and films; physical principles underlying projection; auditory aids to instruction; field trips; pictures, models, and graphic materials; integration of sensory aids with organized instruction. Recommended for all education students. (Maley.)

**Ed. 148. *Student Teaching in Secondary Schools.* (2-8)**

First and second semesters. Prerequisite, Ed. 140\*. Fee, \$30.00 for five or more hours, \$15.00 for less than five hours. In order to be admitted to a course in student teaching, a student must have an overall grade point average of 2.30, a doctor's certificate indicating that the applicant is free of communicable diseases, and the consent of the instructor in the appropriate area. A review committee on student teaching will assist instructors in evaluating all special cases. Undergraduate credit only. Application forms for this course must be submitted to the appropriate adviser by the middle of the semester preceding the one in which an assignment is desired. Students who register for this course serve as apprentice teachers in the schools to which they are assigned. For 8 credits, full time for one-half of one semester is devoted to this work. For experienced teachers, some graduate students and students in physical education and music education who are planning a split student teaching assignment in elementary and secondary schools, the time and credit may be modified. (Staff.)

**Ed. 149. *Student Teaching in Elementary Schools.* (4-16)**

Fee, \$30.00 for five or more hours, \$15.00 for less than five hours. A grade-point average of 2.30, a doctor's certificate indicating freedom from communicable diseases, and approval of the instructor required. A review committee on student teaching will assist instructors in evaluating all special cases. Undergraduate credit only. Application forms for this course must be filed at least ninety days before registration. No other courses may be taken during the semester of student teaching. Students who register for this course serve as apprentice teachers in the schools to which they are assigned. For 16 credits, full time for one semester is devoted to this work. For experienced teachers, the time and credit may be reduced. May be taken for 4 hours credit in combination with a comparable student teaching assignment at the secondary level, by music education and physical education majors with the permission of their advisers. (Blough and O'Neill.)

**Ed. 150. *Educational Measurement.* (2)**

First and second semesters; summer session. Constructing and interpreting measures of achievement. (Johnson.)

**Ed. 151. *Statistical Methods in Education.* (3)**

Designed as a first course in statistics for students in education. Emphasis is upon educational applications of descriptive statistics, including measures of central tendency, variability, and association. (Johnson.)

**Ed. 153. *The Teaching of Reading.* (2-3)**

Concerned with the fundamentals of developmental reading instruction, including reading readiness, use of experience records, procedures in using basal readers, the improvement of comprehension, teaching reading in all areas of the curriculum, uses of children's literature, the program in word analysis, and procedures for determining individual needs. (Schindler.)

**Ed. 154. *Remedial Reading Instruction.* (2-3)**

Prerequisite, Ed. 153 or the equivalent. For supervisors and teachers who wish to help retarded readers. Concerned with causes of reading difficulties, the identification and diagnosis of retarded pupils, instructional materials, and teaching procedures. (Schindler.)

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\*For music education majors the prerequisites for student teaching are as follows: *vocal emphasis*: Music Ed. 132 and 173; *instrumental emphasis*: Music Ed. 132, 163, and 129.



*Ed. 155. Laboratory Practices in Reading for Elementary and Secondary School. (2-4)*

Prerequisite, Ed. 153 or Ed. 154. A laboratory course in which each student has one or more pupils for analysis and instruction. At least one class meeting per week to diagnose individual cases and to plan instruction. (Schindler.)

*Ed. 160. Educational Sociology. (2)*

Deals with data of the social sciences which are germane to the work of teachers. Implications of democratic ideology for educational endeavor, educational tasks imposed by changes in population and technological trends, the welfare status of pupils, the socio-economic attitudes of individuals who control the schools, and other elements of community background. (Risinger, Grambs.)

*Ed. 161. Principles of Guidance. (3)*

First and second semesters, summer session. Overview of principles and practices of guidance-oriented education. (Byrne, Marx.)

*Ed. 162. Mental Hygiene in the Classroom. (2-3)*

The practical application of the principles of mental hygiene to classroom problems. (Denecke.)

*Ed. 163, 164, and 165. Community Study Laboratory I, II and III. (2, 2, 2)*

Involves experience from the educational standpoint with the agencies, institutions, cultural patterns, living conditions, and social processes which play significant roles in shaping the behavior of children and adults and which must be understood by individuals working toward school and community improvement. Each participant becomes a member of a group in a given area of study and concentrates on problems which have direct application in his school situation. Readings are integrated with techniques of study. (Schindler.)

*Ed. 187. Field Experience in Education. (1-4)*

- |                               |                                    |
|-------------------------------|------------------------------------|
| a. Adult Education            | e. Higher Education                |
| b. Curriculum and Instruction | f. Industrial Arts Education       |
| c. Educational Administration | g. Supervision                     |
| d. Guidance and Personnel     | h. Vocational-Industrial Education |

Prerequisites, at least six semester hours in education at the University of Maryland plus such other prerequisites as may be set by the major area in which the experience is to be taken. Planned field experience may be provided for selected graduate students who have had teaching experience and whose application for such field experience has been approved by the Education faculty. Field experience is offered in a given area to both major and non-major students.

*Ed. 188. Special Problems in Education. (1-3)*

Prerequisite, consent of instructor. Available only to mature students who have definite plans for individual study of approved problems. *Course cards must have the title of the problem and the name of the faculty member who has approved it.* (Staff.)

*Ed. 189. Workshops, Clinics, and Institutes. (1-6)*

The maximum number of credits that may be earned under this course symbol toward any degree in six semester hours; the symbol may be used two or more times until six semester hours have been reached. The following types of educational enterprises may be scheduled under this course heading: workshops conducted by the College of



Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil-testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals, and supervisors. (Staff.)

*Ed. 190. Problems and Trends in Contemporary American Education. (2-4)*

Designed to present a broad overview of some key issues and trends that relate to the improvement of instruction at elementary, secondary and teacher education levels. Lectures by visiting educators of national prominence will be reviewed and analyzed in discussion groups led by regular University staff members. (Staff.)

### *For Graduates*

*Ed. 202. The Junior College. (2)*

The philosophy and development of the junior college in the United States with emphasis on curriculum and administrative controls.

*Ed. 203. Problems in Higher Education. (3)*

A study of present problems in higher education. (Wiggin.)

*Ed. 205. Comparative Education. (3)*

A study of historical changes in ways of looking at national school systems, and of problems in assessing their effectiveness. (Wiggin.)

*Ed. 206. Seminar in Comparative Education. (2)*

(Wiggin.)

*Ed. 207. Seminar in History and Philosophy of Education. (2)*

(Wiggin.)

*Ed. 209. Adult Education. (3)*

A study of adult education in the United States, with attention to adult abilities and intelligence, programs of adult education, and a rationale for adult education.

(Wiggin.)

*Ed. 210. The Organization and Administration of Public Education. (3)*

First semester. The basic course in school administration. Deals with the organization and administration of school systems—at the local, state, and federal levels; and with the administrative relationships involved. (Newell.)

*Ed. 211. The Organization, Administration, and Supervision of Secondary Schools. (3)*

Second semester. The work of the secondary school principal. Includes topics such as personnel problems, supervision, school-community relationships, student activities, schedule making, and internal financial accounting. (Staff.)

*Ed. 212. School Finance and Business Administration. (3)*

An introduction to principles and practices in the administration of the public school finance activity. Sources of tax revenue, the budget, and the function of finance in the educational program are considered. (Van Zwoll.)

*Ed. 214. School Plant Planning. (2)*

An orientation course in which the planning of school buildings is developed as educa-

## Education

tional designing with reference to problems of site, building facilities, and equipment. (Van Zwoll.)

### *Ed. 216. Public School Supervision. (3)*

The nature and functions of supervision; various supervisory techniques and procedures; human relationship factors; and personal qualities for supervision. (Staff.)

### *Ed. 217. Administration and Supervision in Elementary Schools. (3)*

Problems in administering elementary schools and improving instruction. (Denecke.)

### *Ed. 218. School Surveys. (2-6)*

Prerequisite, consent of instructor. Includes study of school surveys with emphasis on problems of school organization and administration, finance and school plant planning. Field work in school surveys is required. (Newell.)

### *Ed. 219. Seminar in Educational Administration and Supervision. (2-4)*

Prerequisite, at least four hours in educational administration and supervision or consent of instructor. A student may register for two hours and may take the seminar a second time for an additional two hours.

### *Ed. 220. Pupil Transportation. (2)*

Includes consideration of the organization and administration of state, county, and district pupil transportation service with emphasis on safety and economy. The planning of bus routes; the selection and training of bus drivers, and maintenance mechanics; the specification of school buses; and procurement procedures are included.

### *Ed. 221. Advanced School Plant Planning. (2)*

Ed. 214 is a prerequisite to this course. However, students with necessary background may be admitted without completion of Ed. 214. This is an advanced course in school plant planning problems. Emphasis is given to analysis of the educational program and planning of physical facilities to accommodate that program.

(Van Zwoll.)

### *Ed. 223. Practicum in Personnel Relationships. (2-6)*

Prerequisite, consent of instructor. Enrollment limited. Designed to help teachers, school administrators, and other school staff members to learn to function more effectively in developing educational policy in group situations. Each student in the course is required to be working concurrently in the field with a group of school staff members or citizens on actual school problems. (Newell.)

### *Ed. 224. Apprenticeship in Education. (6-9)*

- |                               |                                    |
|-------------------------------|------------------------------------|
| a. Curriculum and Instruction | e. Industrial Arts Education       |
| b. Educational Administration | f. Supervision                     |
| c. Guidance and Personnel     | g. Vocational Industrial Education |
| d. Higher Education           |                                    |

Apprenticeships in the major area of study are available to selected students whose application for an apprenticeship has been approved by the Education faculty. Each apprentice is assigned to work for at least a semester full-time or the equivalent with an appropriate staff member of a cooperating school, school system, or educational institution or agency. The sponsor of the apprentice maintains a close working relationship with the apprentice and the other persons involved. Prerequisites, teaching experience, a master's degree in education, and at least six semester hours in education at the University of Maryland. (Staff.)

Note: The total number of credits which a student may earn in Ed. 187, Ed. 224, and Ed. 287 is limited to a maximum of twenty (20) semester hours.

*Ed. 225. School Public Relations. (3)*

A study of the interrelationships between the community and the school. Public opinion, propaganda, and the ways in which various specified agents and agencies within the school have a part in the school public relations program are explored. (Van Zwoll.)

*Ed. 226. Child Accounting. (2)*

An inquiry into the record keeping activities of the school system, including an examination of the marking system. (Van Zwoll.)

*Ed. 227. Public School Personnel Administration. (3)*

A comparison of practices with principles governing the satisfaction of school personnel needs, including a study of tenure, salary schedules, supervision, rewards, and other benefits. (Van Zwoll.)

*Ed. 228. Seminar in Student Personnel. (2)*

Prerequisite, consent of instructor. (Same as Psych. 228) A systematic analysis of research and theoretical literature on a variety of major problems in the organization and administration of student personnel services in higher education. Included will be discussion of such topics as the student personnel philosophy in education, counseling services, discipline, housing, student activities, financial aid, health, remedial services, etc. (Byrne, Magoon, Marx.)

*Ed. 229. Seminar in Elementary Education. (2)*

Primarily for individuals who wish to write seminar papers. Enrollment should be preceded by at least 12 hours of graduate work in education.

*Ed. 234. The School Curriculum. (2-3)*

A foundations course embracing the curriculum as a whole from early childhood through adolescence, including a review of historical developments, an analysis of conditions affecting curriculum change, an examination of issues in curriculum making, and a consideration of current trends in curriculum design. (Hovet.)

*Ed. 235. Principles of Curriculum Development. (3)*

Curriculum planning, improvement, and evaluation in the schools; principles for the selection and organization of the content and learning experiences; ways of working in classroom and school on curriculum improvement. (Hovet, Anderson.)

*Ed. 237. Curriculum Theory and Research. (2)*

The school curriculum considered within the totality of factors affecting pupil behavior patterns, an analysis of research contributing to the development of curriculum theory, a study of curriculum theory as basic to improved curriculum design, the function of theory in guiding research, and the construction of theory through the utilization of concepts from the behavior research disciplines. (Hovet.)

*Ed. 239. Seminar in Secondary Education. (2)**Ed. 242. Coordination in Work-Experience Programs. (2)*

Surveys and evaluates the qualifications and duties of a teacher-coordinator in a work-experience program. Deals particularly with evolving patterns in city and county schools in Maryland, and is designed to help teacher-coordinators, guidance counselors, and others in the supervisory and administrative personnel concerned with functioning relationships of part-time cooperative education in a comprehensive educational program. (Merrill.)

*Ed. 243. Problems of Teaching Arithmetic in Elementary Schools. (2)*  
Implications of theory and results of research for the teaching of arithmetic in the elementary schools. (Schindler.)

*Ed. 244. Problems of Teaching Language Arts in Elementary Schools. (2)*  
Implications of current theory and results of research for the language arts in the elementary schools.

*Ed. 245. Introduction to Research. (2)*  
Intensive reading, analysis, and interpretation of research; applications to teaching fields; the writing of abstracts, research reports, and seminar papers. (Hovet.)

*Ed. 246. Problems of Teaching Social Studies in Elementary Schools. (2)*  
Application to the social studies program of selected theory and research in the social sciences, emphasizing patterns of behavior, environmental influences, and critical thinking. (O'Neill.)

*Ed. 247. Seminar in Science Education. (2)*  
An opportunity to pursue special problems in curriculum making, course of study development, or other science teaching problems. Class members may work on problems related directly to their own school situations. (Blough, Udry.)

*Ed. 248. Seminar in Industrial Arts and Vocational Education. (2)*  
(See Ind. Ed. 248)

*Ed. 250. Analysis of the Individual. (3)*  
Knowing students through use of numerous techniques. Ed. 161 desirable as prerequisite. (Byrne.)

*Ed. 251. Intermediate Statistics in Education. (3)*  
Prerequisite, Education 151 or equivalent. A study of the basic statistical techniques used for graduate research in education, including tests of significance and sampling techniques. Necessary arithmetic skills are developed as part of the course. (Johnson.)

*Ed. 253. Guidance Information. (2)*  
Ed. 161 desirable as prerequisite. Finding, filing, and using information needed by students for making choices, plans, and adaptations in school, occupations, and in inter-personal relations. (Byrne.)

*Ed. 254. Organization and Administration of Guidance Programs. (2)*  
Instilling the guidance point of view and implementing guidance practices. All guidance courses except Seminar are prerequisites. (Marx.)

*Ed. 260. School Counseling: Theoretical Foundations and Practice. (3)*  
Prerequisites, Ed. 161, 250, 253. Prerequisites may be waived by instructor. Exploration of learning theories as applied to counseling in schools, and practices which stem from such theories. (Byrne.)

*Ed. 261. Practicum in School Counseling. (2)*  
Prerequisite, Ed. 260. Limited to 15 applicants in advance, who will have one or more pupils available for counseling. (Byrne.)

*Ed. 263, 264. Aptitudes and Aptitude Testing. (2, 2)*  
(Johnson.)



*Ed. 267. Curriculum Construction Through Community Analysis. (2)*  
Prerequisites, Ed. 163, 164, 165. Selected research problems in the field of community study with emphasis on Baltimore area. (Schindler.)

*Ed. 268. Seminar in Educational Sociology. (2)*

*Ed. 269. Seminar in Guidance. (2)*

Registration only by approval of instructor. Final guidance course. Students study and conduct research. (Byrne.)

*Ed. 278. Seminar in Special Education. (2)*

An overview of education of exceptional children. (Haring.)

*Ed. 279. Seminar in Adult Education. (2)*

(Wiggin.)

*Ed. 280. Research Methods and Materials. (2)*

Research methodology for case studies, surveys, and experiments; measurement and statistical techniques; design, form, and style for theses and research reports. Primarily for advanced students and doctoral candidates. (Johnson.)

*Ed. 281. Source Materials in Education. (2)*

Bibliography development through a study of source materials in education, special fields in education, and for seminar papers and theses. (Wiggin.)

*Ed. 287. Internship in Education. (12-16)*

a. Curriculum and Instruction

b. Educational Administration

c. Guidance and Personnel

d. Industrial Arts Education

e. Supervision

f. Vocational-Industrial Education

Internships in the major area of study are available to selected students who have teaching experience. The following groups of students are eligible: (a) any student who has been advanced to candidacy for the doctor's degree; and (b) any student who receives special approval by the Education faculty for an internship, provided that prior to taking an internship, such student shall have completed at least sixty semester hours of graduate work, including at least six semester hours in education at the University of Maryland. Each intern is assigned to work on a full-time basis for at least a semester with an appropriate staff member in a cooperating school, school system, or educational institution or agency. The internship must be taken in a school situation different from the one where the student is regularly employed. The intern's sponsor maintains a close working relationship with the intern and the other persons involved.

Note: The total number of credits which a student may earn in Ed. 187, Ed. 224, and Ed. 287 is limited to a maximum of twenty (20) semester hours.

*Ed. 288. Special Problems in Education. (1-6)*

First and second semesters and summer session. Master of Education or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for credit under this number. *Course card must have the title of the problem and the name of the faculty member under whom the work will be done.* (Staff.)

*Ed. 290. Doctoral Seminar. (1-3)*

Prerequisite: Passing the preliminary examinations for a doctor's degree in education,



or recommendation of a doctoral adviser. Analysis of doctoral projects and theses, and of other on-going research projects. A doctoral candidate may participate in the Seminar during as many University sessions as he desires, but may earn no more than three semester hours of credit in the Seminar. An Ed.D. candidate may earn in total no more than nine semester hours, and a Ph.D. candidate, no more than eighteen semester hours, in the Seminar and in Ed. 399. (Johnson.)

*Ed. 399. Research—Thesis. (1-6)*

First and second semesters; summer session. Students who desire credit for a master's thesis, a doctoral dissertation, or a doctoral project should use this number.

(Staff.)

## BUSINESS EDUCATION

### *For Advanced Undergraduates and Graduates*

*B. Ed. 100. Techniques of Teaching Office Skills. (3)*

First semester. An examination and evaluation of the aims, methods, and course contents of each of the office skill subjects offered in the high school curriculum.

(Patrick.)

*B. Ed. 101. Problems in Teaching Office Skills. (2)*

Problems in development of occupational competency, achievement tests, standards of achievement, instructional materials, transcription, and the integration of office skills.

(Patrick.)

*B. Ed. 102. Methods and Materials in Teaching Bookkeeping, and Related Subjects. (2)*

Important problems and procedures in the mastery of bookkeeping and related office knowledges and the skills including a consideration of materials and teaching procedures.

(Patrick.)

*B. Ed. 104. Basic Business Education in the Secondary Schools. (2)*

Includes consideration of course objectives; subject matter selection; and methods of organizing and presenting business principles, knowledges, and practices.

(Patrick.)

### *For Graduates*

*B. Ed. 200. Administration and Supervision of Business Education. (2)*

Major emphasis on departmental organization, curriculum, equipment, budget-making, guidance, placement and follow-up, visual aids and the in-service training of teachers. For administrators, supervisors, and teachers of business subjects.

*B. Ed. 255. Principles and Problems of Business Education. (2)*

Principles and practices in business education; growth and present status; vocational business education; general business education relation to consumer education and to education in general.

(Patrick.)

*B. Ed. 256. Curriculum Development in Business Education. (2-6)*

This course is especially designed for graduate students interested in devoting the summer session to a concentrated study of curriculum planning in business education. Emphasis will be placed on the philosophy and objectives of the business education program, and on curriculum research and organization of appropriate course content.

## CHILDHOOD EDUCATION

### *C. Ed. 2. Introduction to Childhood Education. (2)*

First and second semesters. Orientation to nursery school, kindergarten, and other aspects of the field of childhood education. (Yuill.)

### *For Advanced Undergraduates and Graduates*

### *C. Ed. 50. Child Development I. (3)*

First semester. An intensive study of the normal child's social, emotional, physical, and intellectual development, from the prenatal period to the nursery school years. (Hymes.)

### *C. Ed. 51. Child Development II. (3)*

Second semester. A continuation of Child Development I, through the early childhood years. (Hymes.)

### *C. Ed. 110. Child Development III. (3)*

First and second semesters. Developmental growth of the child from the prenatal period through the early childhood years, with implications for home and school practice. For students in other colleges of the University. (Broome.)

### *C. Ed. 115. Children's Activities and Activities Materials. (3)*

First and second semesters. Prerequisites, C. Ed. 100, 101, or 110. Laboratory fee, \$5.00. Storytelling; selection of books for pre-school children; the use, preparation, and presentation of such raw materials as clay, paints (easel and finger), blocks, wood, and scrap materials for nursery school and kindergarten. (Broome.)

### *C. Ed. 116. Creative Music for Young Children. (2-3)*

First and second semesters. Prerequisite, Music 16 or equivalent. Creative experiences in songs and rhythms, correlation of music and everyday teaching with the abilities and development of each level; study of songs and materials; observation and teaching experience with each age level. (Brown.)

### *C. Ed. 119. Curriculum, Instruction, and Observation—Cooperative Nursery School. (2-3)*

### *C. Ed. 140. Curriculum, Instruction, and Observation—Early Childhood Education (Nursery School and Kindergarten). (3)*

Prerequisites, C. Ed. 100, 101, or 110. Philosophy of early childhood education; observation of the developmental needs at various age levels, with emphasis upon the activities, materials, and methods by which educational objectives are attained. (Stant and Staff.)

### *C. Ed. 145. Guidance in Behavior Problems. (3)*

First and second semesters. Development of an appreciation and understanding of young children from different home and community backgrounds; study of individual and group problems. (Hymes.)

### *C. Ed. 149. Teaching Nursery School. (4-8)*

First and second semesters. Fee, \$30.00 for five or more hours, \$15.00 for less than five hours. Admission to student teaching depends upon physical and emotional fitness, and upon approval of the staff of the Department. A doctor's certificate indicating

freedom from communicable diseases is required of every applicant before student teaching is begun. An academic average of 2.30 is required. It is recommended that each student have some summer experience with young children. Students teach in the University Nursery School and in those of nearby communities.

(Brown, Stant, Yuill.)

*C. Ed. 159. Teaching Kindergarten. (4-8)*

First and second semesters. Fee, \$30.00 for five or more hours, \$15.00 for less than five hours. Admission to student teaching depends upon approval of the teaching staff of the Department. A doctor's certificate indicating freedom from communicable diseases is required of every applicant before student teaching is begun. An academic average of 2.30 is required. It is recommended that each student have some summer experience with young children. Students teach in the University Kindergarten and in those of nearby communities.

(Brown, Stant, Yuill.)

*C. Ed. 160. Methods and Materials in Parent Education. (2-3)*

A survey of child development, child guidance, and related fields; a review of current materials, books, periodicals, leaflets, films, skits; study of individual parent conferences, guided observation, discussion leading, role playing, preparing materials and programs for parent groups and television skits with laboratory practice through the group itself.

## HOME ECONOMICS EDUCATION

### *For Advanced Undergraduates and Graduates*

*H. E. Ed. 102. Problems in Teaching Home Economics. (3)*

First and second semesters. Prerequisite, H. E. Ed. 140. A study of the managerial aspects of teaching and administering a home-making program; the physical environment, organization, and sequence of instructional units, resource materials, evaluation, home projects.

(Spencer.)

*H. E. Ed. 120. Evaluation of Home Economics. (3)*

The meaning and function of evaluation in education; the development of a plan for evaluating a homemaking program with emphasis upon types of evaluation devices, their construction, and use.

(Spencer.)

*H. E. Ed. 140. Curriculum, Instruction, and Observation. (3)*

The place and function of home economics education in the secondary school curriculum. Philosophy of education for home and family living; characteristics of adolescence, construction of source units, lesson plans, and evaluation devices; directed observation in junior and senior high school home economics departments.

(Spencer.)

*H. E. Ed. 148. Teaching Vocational Home Economics in the Secondary Schools. (8)*

First and second semesters. Prerequisite, H. E. Ed. 140 and 102 parallel. See Ed. 148 for additional requirements. Fee, \$30.00 for five or more hours, \$15.00 for less than five hours. Observation and supervised teaching in approved secondary school home economics departments in Maryland and the District of Columbia.

(Spencer.)

*H. E. Ed. 200. Seminar in Home Economics Education. (2)* (Spencer.)

H. E. Ed. 202. *Trends in the Teaching and Supervision of Home Economics.* (2-4)

Study of home economics programs and practices in light of current educational trends. Interpretation and analysis of democratic teaching procedures, outcomes of instruction, and supervisory practices. (Spencer.)

## HUMAN DEVELOPMENT EDUCATION

The staff of the Institute for Child Study offers a series of courses on human development and approaches to the direct study of children for members of the educational profession. Certain prerequisites are set up within the course sequences but these prerequisites are modified by the student's previous experience in direct study of children; this is done in order to provide an interrelated series of experiences leading toward synthesis and the ability to apply the principles of human development and behavior.

Undergraduate courses are designed both for prospective teachers (H. D. Ed. 100-101) and in-service teachers (H. D. Ed. 102, 103, 104; H. D. Ed. 112-13, 114-15, 116-17.) The graduate offering contains two series. H. D. Ed. 200, 201, 202, 203 provide a basic core of four seminars for students majoring in the field, and also provide electives (beginning with H. D. Ed. 200—Introduction) for any graduate students interested in an overview of the field. The other seminars (H. D. Ed. 204 and above) are designed for emphasis in depth on the various areas of major processes and forces that shape the development and behavior of human beings, and are intended primarily for advanced graduate students. Along with most of the graduate seminars, H. D. Ed. 250 provides for concurrent application of scientific knowledge to the direct study of children as individuals and in groups.

### *For Advanced Undergraduates and Graduates*

H. D. Ed. 100, 101. *Principles of Human Development I and II.* (3, 3)

H. D. Ed. 100 is prerequisite to H. D. Ed. 101. These courses give a general overview of the scientific principles that describe human development and behavior and relate these principles to the task of the school. A year-long study of an individual child is an integral part of the course and will require one half-day per week for observing children in nearby schools. *This course is designed to meet the usual certification requirements in Educational Psychology.*

H. D. Ed. 102, 103, 104. *Child Development Laboratory I, II and III.* (2, 2, 2)

These courses involve the direct study of children throughout the school year. Each participant gathers a wide body of information about an individual, presents the accumulating data from time to time to the study group for criticism and group analysis and writes an interpretation of the dynamics underlying the child's learning, behavior and development. Provides opportunity for teachers in-service to earn credit for participation in their own local child study group.

H. D. Ed. 112, 114, 116. *Scientific Concepts in Human Development I, II, III.* (3, 3, 3)

Summer session.



H. D. Ed. 113, 115, 117. *Laboratory in Behavior Analysis I, II, III.* (3, 3, 3)  
Summer session.

*For Graduates*

H. D. Ed. 200. *Introduction to Human Development and Child Study.* (3)  
Offers a general overview of the scientific principles which describe human development and behavior and makes use of these principles in the study of individual children. Each student will observe and record the behavior of an individual child throughout the semester and must have one half-day a week for this purpose. It is basic to further work in child study and serves as a prerequisite for advanced courses where the student has not had field work or at least six weeks of workshop experience in child study. When offered during the summer intensive laboratory work with case records may be substituted for the study of an individual child.

H. D. Ed. 201. *Biological Bases of Behavior.* (3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent must be taken before H. D. Ed. 201 or concurrently. Emphasizes that understanding human life, growth, and behavior depends on understanding the ways in which the body is able to capture, control, and expand energy. Application throughout is made to human body processes and implications for understanding and working with people.

H. D. Ed. 202. *Social Bases of Behavior.* (3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent must be taken before H. D. Ed. 202 or concurrently. Analyzes the socially inherited and transmitted patterns of pressures, expectations, and limitations learned by an individual as he grows up. These are considered in relation to the patterns of feeling and behaving which emerge as the result of growing up in one's social group.

H. D. Ed. 203. *Integrative Bases of Behavior.* (3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent, H. D. Ed. 201 and H. D. Ed. 202 are prerequisite. Analyzes the organized and integrated patterns of feeling, thinking and behaving which emerge from the interaction of basic biological drives and potentials with one's unique experience growing up in a social group.

H. D. Ed. 204, 205. *Physical Processes in Human Development.* (3, 3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. Describes in some detail the major organic processes of: conception, biological inheritance; differentiation and growth of the body; capture, transportation and use of energy; perception of the environment; coordination and integration of function; adaptation to unusual demands and to frustration; normal individual variation in each of the above processes.

H. D. Ed. 206, 207. *Socialization Processes in Human Development I, II.*  
(3, 3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. Analyzes



the processes by which human beings internalize the culture of the society in which they live. The major sub-cultures in the United States, their training procedures, and their characteristic human expressions in folk-knowledge, habits, attitudes, values, life-goals, and adjustment patterns are analyzed. Other cultures are examined to highlight the American way of life and to reveal its strengths and weaknesses.

H. D. Ed. 208, 209. *Self Processes in Human Development I and II.* (3, 3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. Analyzes the effects of the various physical and growth processes, affectional relationships, socialization processes, and peer group roles and status on the integration, development, adjustment, and realization of the individual self. This analysis includes consideration of the nature of intelligence and of the learning process; the development of skills, concepts, generalizations, symbolizations, reasoning and imagination, attitudes, values, goals and purposes; and the conditions, relationships and experiences that are essential to full human development. The more common adjustment problems experienced in our society at various maturity levels, and the adjustment mechanisms used to meet them are studied.

H. D. Ed. 210. *Affectional Relationships and Processes in Human Development.* (3)

H. D. Ed. 250 a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent must be taken before or concurrently. Describes the normal development, expression and influence of love in infancy, childhood, adolescence and adulthood. It deals with the influence of parent-child relationship involving normal acceptance, neglect, rejection, inconsistency, and over-protection upon health, learning, emotional behavior and personality adjustment and development.

H. D. Ed. 211. *Peer-culture and Group Processes in Human Development.* (3)

H. D. Ed. a or b or c must be taken concurrently with this course. H. D. Ed. 200 or its equivalent must be taken before or concurrently. Analyzes the processes of group formation, role-taking and status-winning. It describes the emergence of the "peer-culture" during childhood and the evolution of the child society at different maturity levels to adulthood. It analyzes the development tasks and adjustment problems associated with winning belonging and playing roles in the peer group.

H. D. Ed. 212, 214, 216. *Advanced Scientific Concepts in Human Development I, II, III.* (3, 3, 3)

Summer session.

H. D. Ed. 213, 215, 217. *Advanced Laboratory in Behavior Analysis I, II, III.* (3, 3, 3)

Summer session.

H. D. Ed. 218. *Workshop in Human Development.* (6)

Summer session. Prerequisites, H. D. Ed. 212, 213, 214, 215, 216, 217.

H. D. Ed. 219. *Psycho-Social Development of Exceptional Children.* (3)

Studies intensively the psychology of exceptional children with stress upon the inter-relationship among the psychological, physical, and social development of these children.

*H. D. Ed. 220. Developmental Tasks. (3)*

H. D. Ed. 200 or its equivalent, H. D. Ed. 201, and H. D. Ed. 202 are prerequisites. Describes the series of developmental tasks faced by children. These tasks, made necessary by the normal processes of growth and development, are learnings that the child needs and desires to accomplish because of emerging capacities for action and relationship, because of the demands and expectancies of his family and of society, and because of the progressive clarification and the directive powers of his own interests, attitudes, values and aspirations. Emphasis will be placed on the use of developmental tasks concepts in educational planning and practice.

*H. D. Ed. 230, 231. Field Program in Child Study I and II. (2-6)*

Prerequisite, consent of instructor. Offers apprenticeship training preparing properly qualified persons to become staff members in human development workshops, consultants to child study field programs and coordinators of municipal or regional child study programs for teachers or parents. Extensive field experience is provided. In general this training is open only to persons who have passed their preliminary examinations for the doctorate with a major in human development or psychology.

*H. D. Ed. 250a, 250b, 250c. Direct Study of Children. (1, 1, 1)*

May not be taken concurrently with H. D. Ed. 102, 103, 104, or 200. Provides the opportunity to observe and record the behavior of an individual child in a nearby school. These records will be used in conjunction with the advanced courses in human development and this course will be taken concurrently with such courses. Teachers active in their jobs while taking advanced courses in human development may use records from their own classrooms for this course.

*H. D. Ed. 260. Synthesis of Human Development Concepts. (3)*

Prerequisites, H. D. Ed. 204, 206 and 208. A seminar wherein advanced students work toward a personal synthesis of their own concepts in human growth and development. Emphasis is placed on seeing the dynamic interrelations between all processes in the behavior and development of an individual.

*H. D. Ed. 270. Seminars in Special Topics in Human Development. (2-6)*

Prerequisite, consent of the instructor. An opportunity for advanced students to focus in depth on topics of special interest growing out of their basic courses in human development.

## INDUSTRIAL EDUCATION

*Ind. Ed. 1. Mechanical Drawing. (2)*

Two laboratory periods a week. Laboratory fee, \$5.00. This course constitutes an introduction to orthographic multi-view and isometric projection. Emphasis is placed upon the visualization of an object when it is represented by a multi-view drawing and upon the making of multi-view drawings. The course carries through auxiliary views, sectional views, dimensioning, conventional representation and single stroke letters.

*Ind. Ed. 2. Elementary Woodworking. (2)*

Two laboratory periods a week. Laboratory fee, \$5.00. This is a woodworking course which involves primarily the use of hand tools. The course is developed so that the

student uses practically every common woodworking hand tool in one or more situations. There is also included elementary wood finishing, the specifying and storing of lumber, and the care and conditioning of tools used.

*Ind. Ed. 9. Industrial Arts in the Elementary School I. (2)*

Two laboratory periods a week. Laboratory fee, \$5.00. A course for pre-service and in-service elementary school teachers covering construction activities in a variety of media suitable for classroom use. The work is organized on the unit basis so that the construction aspect is supplemented by reading and other investigative procedures.

*Ind. Ed. 10. Industrial Arts in the Elementary School II. (2)*

Prerequisite, Ind. Ed. 9. This is a continuation of Ind. Ed. 9. Two laboratory periods a week. Laboratory fee, \$5.00. It provides the teacher with opportunities to develop further competence in construction activities. Some of the basic phenomena of industry are studied, particularly those which apply to the manufacture of common products, housing, transportation and communication.

*Ind. Ed. 12. Shop Calculations. (3)*

Shop Calculations is designed to develop an understanding and working knowledge of the mathematical concepts related to the various aspects of industrial education. The course includes phases of algebra, geometry, trigonometry, and general mathematics as applied to shop and drawing activities.

*Ind. Ed. 21. Mechanical Drawing. (2)*

Two laboratory periods a week. Prerequisite, Ind. Ed. 1. Laboratory fee, \$5.00. A course dealing with working drawings, machine design, pattern layouts, tracing and reproduction. Detail drawings followed by assemblies are presented.

*Ind. Ed. 22. Machine Woodworking I. (2)*

Two laboratory periods a week. Prerequisite, Ind. Ed. 2. Laboratory fee, \$5.00. Machine Woodworking I offers initial instruction in the proper operation of the jointer, band saw, variety saw, jig saw, mortiser, shaper, and lathe. The types of jobs which may be performed on each machine and their safe operation are of primary concern.

*Ind. Ed. 23. Arc and Gas Welding. (1)*

One laboratory period a week. Laboratory fee, \$5.00. A course designed to develop a functional knowledge of the principles and use of electric and acetylene welding. Practical work is carried on in the construction of various projects using welded joints. Instruction is given in the use and care of equipment, types of welded joints, methods of welding, importance of welding processes in industry, safety considerations, etc.

*Ind. Ed. 24. Sheet Metal Work. (2)*

Two laboratory periods a week. Laboratory fee, \$5.00. Articles are made from metal in its sheet form and involve the operations of cutting, shaping, soldering, riveting, wiring, folding, seaming, beading, burring, etc. The student is required to develop his own patterns inclusive of parallel line development, radial line development, and triangulation.

*Ind. Ed. 26. General Metal Work. (3)*

Three two-hour laboratory periods a week. Laboratory fee, \$7.50. This course provides experiences in constructing items from aluminum, brass, copper, pewter, and

steel. The processes included are designing, lay out, heat treating, forming, surface decorating, fastening, and assembling. The course also includes a study of the aluminum, copper, and steel industries in terms of their basic manufacturing processes.

### *Ind. Ed. 28. Electricity I. (2)*

Two laboratory periods a week. Laboratory fee, \$5.00. An introductory course to electricity in general. It deals with the electrical circuit, elementary wiring problems, the measurement of electrical energy, and a brief treatment of radio.

### *Ind. Ed. 31. Mechanical Drawing. (2)*

Two laboratory periods a week. Prerequisites, Ind. Ed. 1 and 21. Laboratory fee, \$5.00. A course dealing with the topics enumerated in Ind. Ed. 21 but on a more advanced basis. The reading of prints representative of a variety of industries is a part of this course.

### *Ind. Ed. 33. Automotives I. (3)*

Three two-hour laboratory periods a week. Laboratory fee, \$7.50. Automotives I is a study of the fundamentals of internal combustion engines as applied to transportation. A study of basic materials and methods used in the automotive industry is included. Shop practices are built around the maintenance and minor repair of automobiles and smaller motor driven apparatus.

### *Ind. Ed. 34. Graphic Arts I. (3)*

Three two-hour laboratory periods a week. Laboratory fee, \$7.50. An introductory course involving experiences in letterpress and offset printing practices. This course includes typographical design, hand composition, proof reading, stock preparation, offset plate making, imposition, lock-up, stock preparation, presswork, linoleum block cutting, paper marbelizing, and bookbinding.

### *Ind. Ed. 41. Architectural Drawing. (2)*

Two laboratory periods a week. Prerequisite, Ind. Ed. 1, or equivalent. Laboratory fee, \$5.00. Practical experience is provided in the design and planning of houses and other buildings. Working drawings, specifications, and blue-prints are featured.

### *Ind. Ed. 42. Machine Woodworking II. (2)*

Two laboratory periods a week. Prerequisite, Ind. Ed. 22, or equivalent. Laboratory fee, \$5.00. Advanced production methods with emphasis on cabinetmaking and design.

### *Ind. Ed. 43. Automotives II. (3)*

Three two-hour laboratory periods a week. Prerequisite, Ind. Ed. 33. Laboratory fee, \$7.50. This is an advanced course in automobile construction and maintenance covering the engine, fuel system, ignition system, chassis, and power train. Shop practices are built around the major repair and adjustment of the above groups.

### *Ind. Ed. 44. Graphic Arts II. (3)*

Three two-hour laboratory periods a week. Prerequisite, Ind. Ed. 34. Laboratory fee, \$7.50. An advanced course designed to provide further experiences in letterpress and offset printing and to introduce other reproduction processes. Silk screen printing, dry point etching, mimeograph reproduction, and rubber stamp making are the new processes introduced in this course.



*Ind. Ed. 48. Electricity II. (2)*

Two laboratory periods a week. Laboratory fee, \$5.00. Principles involved in a-c and d-c electrical equipment, including heating measurements, motors and controls, electro-chemistry, the electric arc, inductance and reactance, condensers, radio, and electronics.

*Ind. Ed. 50. Methods of Teaching. (2)*

(Offered at University College Centers.) For vocational and occupational teachers of shop work and related subjects. The identification and analysis of factors essential to helping others learn; types of teaching situations and techniques; measuring results and grading student progress in shop and related technical subjects.

*Ind. Ed. 60. Observation and Demonstration Teaching. (2)*

(Offered in Baltimore.) Prerequisite, Educational Psychology and/or Methods of Teaching Vocational and Occupational Subjects. Primarily for vocational and occupational teachers. Sixteen hours of directed observation and demonstration teaching. Reports, conferences, and criticisms constitute the remainder of scheduled activities in this course.

*Ind. Ed. 66. Art Metal Work. (2)*

Two laboratory periods a week. Prerequisite, Ind. Ed. 26, or equivalent. Laboratory fee, \$5.00. Advanced practicum. It includes methods of bowl raising and bowl ornamenting.

*Ind. Ed. 69. Machine Shop Practice I. (3)*

Two three-hour laboratory periods a week. Prerequisite, Ind. Ed. 1, or equivalent. Laboratory fee, \$7.50. Bench work, turning, planing, milling, and drilling. Related technical information.

*Ind. Ed. 89. Machine Shop Practice II. (2)*

Two laboratory periods a week. Prerequisite, Ind. Ed. 69, or equivalent. Laboratory fee, \$5.00. Advanced shop practicum in thread cutting, grinding, boring, reaming, and gear cutting. Work-production methods are employed.

*Ind. Ed. 94. Shop Maintenance. (2)*

Prerequisite, 8 semester hours of shop credit, or equivalent. Skill developing practice in the maintenance of school-shop facilities.

*Ind. Ed. 101. Operational Drawing. (2)*

Two laboratory periods a week. Prerequisite, Ind. Ed. 1, or equivalent. Laboratory fee, \$5.00. A comprehensive course designed to give students practice in the modern drafting methods of industry.

*Ind. Ed. 102. Advanced Woodfinishing and Upholstery. (2)*

Two laboratory periods a week. Prerequisite, Ind. Ed. 22, or equivalent. Laboratory fee, \$5.00. This course offers instruction in wood finishing techniques applicable to furniture restoration and in the processes of upholstering furniture.

*Ind. Ed. 104. Advanced Practices in Sheet Metal Work. (2)*

Two laboratory periods a week. Prerequisite, Ind. Ed. 24, or equivalent. Laboratory fee, \$5.00. Study of the more complicated processes involved in commercial items. Calculations and pattern making are emphasized.



## *Industrial Education*

### *Ind. Ed. 105. General Shop. (2)*

Laboratory fee, \$5.00. Designed to meet needs in organizing and administering a secondary school general shop. Students are rotated through skill and knowledge developing activities in a variety of shop areas.

### *Ind. Ed. 106. Art Metal Work. (2)*

Two laboratory periods a week. Laboratory fee, \$5.00. Basic operations in the art of making jewelry including ring making and stone setting.

### *Ind. Ed. 108. Electricity III. (2)*

Two laboratory periods a week. Prerequisite, Ind. Ed. 28, or equivalent. Laboratory fee, \$5.00. Experimental development of apparatus and equipment for teaching the principles of electricity.

### *Ind. Ed. 109. Experimental Electricity and Electronics—A, B, C, D. (2, 2, 2, 2)* (Offered in Baltimore.)

### *Ind. Ed. 110. Foundry. (1)*

One laboratory period a week. Laboratory fee, \$5.00. Bench and floor molding and elementary core making. Theory and principles covering foundry materials, tools, and appliances.

### *Ind. Ed. 111. Laboratory Practicum in Industrial Arts Education. (3)*

Three two-hour laboratory periods a week. Prerequisite, eighteen semester hours of shopwork and drawing. Laboratory fee, \$7.50. A course devoted to the development of instructional materials and the refinement of instructional methods pertinent to the teaching of industrial arts at the secondary school level.

### *Ind. Ed. 124 a, b. Organized and Supervised Work Experience.*

(3 credits for each internship period, total: 6 credits). This is a work experience sequence planned for students enrolled in the curriculum, "Education for Industry." The purpose is to provide the students with opportunities for first-hand experiences with business and industry. The student is responsible for obtaining his own employment with the coordinator advising him in regard to the job opportunities which have optimum learning value. The nature of the work experience desired is outlined at the outset of employment and the evaluations made by the student and the coordinator are based upon the planned experiences. The time basis for each internship period is 6 forty-hour weeks or 240 work hours. Any one period of internship must be served through continuous employment in a single establishment. Two internship periods are required. The two internships may be served with the same business or industry. The completion for credit of any period of internship requires the employer's recommendation in terms of satisfactory work and work attitudes. More complete details are found in the handbook prepared for the student of this curriculum.

### *Ind. Ed. 140 (Ed. 140). Curriculum, Instruction, and Observation. (3)*

Major functions and specific contributions of industrial art education; its relation to the general objectives of the junior and senior high schools; selection and organization of subject matter in terms of modern practices and needs; methods of instruction; expected outcomes; measuring results; professional standards. Twenty periods of observation.

*Ind. Ed. 143. Industrial Safety Education I. (2)*

This course deals briefly with the history and development of effective safety programs in modern industry and treats causes, effects, and values of industrial safety education inclusive of fire prevention and hazard controls.

*Ind. Ed. 144. Industrial Safety Education II. (2)*

In this course exemplary safety practices are studied through conference discussions, group demonstrations, and organized plant visits to selected industrial situations. Methods of fire precautions and safety practices are emphasized. Evaluative criteria in safety programs are formulated.

*Ind. Ed. 148. Student Teaching in Secondary Schools. (2-8)*

First and second semesters. See Ed. 148 for additional requirements. Fee, \$30.00 for five or more hours, \$15.00 for less than five hours.

*Ind. Ed. 150. Training Aids Development. (3)*

Study of the aids in common use as to their source and application. Special emphasis is placed on principles to be observed in making aids useful to shop teachers. Actual construction and application of such devices will be required.

*Ind. Ed. 157. Tests and Measurements. (2)*

Prerequisite, Ed. 150 or consent of instructor. The construction of objective tests for occupational and vocational subjects.

*Ind. Ed. 160. Essentials of Design. (2)*

Two laboratory periods a week. Prerequisites, Ind. Ed. 1 and basic shop work. Laboratory fee, \$5.00. A study of the basic principles of design and practice in their application to the construction of shop projects.

*Ind. Ed. 161. Principles of Vocational Guidance. (2)*

This course identifies and applies the underlying principles of guidance to the problems of educational and vocational adjustment of students.

*Ind. Ed. 164. Shop Organization and Management. (2)*

This course covers the basic elements of organizing and managing an industrial education program including the selection of equipment and the arrangement of the shop.

*Ind. Ed. 165. Modern Industry. (3)*

This course provides an overview of manufacturing industry in the American social, economic, and culture pattern. Representative basic industries are studied from the viewpoints of personnel and management organization, industrial relations, production procedures, distribution of products, and the like.

*Ind. Ed. 166. Educational Foundations of Industrial Arts. (2)*

A study of the factors which place industrial arts education in any well-rounded program of general education.

*Ind. Ed. 167. Problems in Occupational Education. (2)*

The purpose of this course is to secure, assemble, organize, and interpret data relative to the scope, character, and effectiveness of occupational education.

## *Industrial Education*

### *Ind. Ed. 168. Trade or Occupational Analysis. (2)*

This course should precede Ind. Ed. 169. Provides a working knowledge of occupational and job analysis which is basic in organizing vocational-industrial courses of study.

### *Ind. Ed. 169. Course Construction. (2)*

Surveys and applies techniques of building and reorganizing courses of study for effective use in vocational and occupational schools.

### *Ind. Ed. 170. Principles of Vocational Education. (2)*

The course develops the vocational education movement as an integral phase of the American program of public education.

### *Ind. Ed. 171. History of Vocational Education. (2)*

An overview of the development of vocational education from primitive times to the present.

### *Ind. Ed. 175. Recent Technological Developments in Products and Processes. (3)*

This course is designed to give the student an understanding of recent technological developments as they pertain to the products and processes of industry. The nature of the newer products and processes is studied as well as their effect upon modern industry and/or society.

## *For Graduates*

### *Ind. Ed. 207. Philosophy of Industrial Arts Education. (3)*

This course is intended to assist the student in his development of a point of view in regard to industrial arts and its relationship with the total educational program. He should, thereby, have a "yardstick" for appraising current procedures and proposals and an articulateness for his own professional area.

### *Ind. Ed. 214. School Shop Planning and Equipment Selection. (3)*

This course deals with principles involved in planning a school shop and provides opportunities for applying these principles. Facilities required in the operation of a satisfactory shop program are catalogued and appraised.

### *Ind. Ed. 216. Supervision of Industrial Arts. (2)*

### *Ind. Ed. 220. Organization, Administration and Supervision of Vocational Education. (2)*

This course surveys objectively the organization, administration, supervision, curricular spread and viewpoint, and the present status of vocational education.

### *Ind. Ed. 240. Research in Industrial Arts and Vocational Education. (2)*

This is a course offered by arrangement for persons who are conducting research in the areas of industrial arts and vocational education.

### *Ind. Ed. 241. Content and Method of Industrial Arts. (3)*

Various methods and procedures used in curriculum development are examined and

those suited to the field of Industrial Arts education are applied. Methods of and devices for industrial arts instruction are studied and practiced.

*Ind. Ed. 248. Seminar in Industrial Arts and Vocational Education. (2)*

## MUSIC EDUCATION

### *For Advanced Undergraduates and Graduates*

*Mus. Ed. 125. Creative Activities in the Elementary School. (2)*

Prerequisite, Music 16 or consent of instructor. A study of the creative approach to singing, listening, playing, rhythmic activity, and composition. These topics are studied in correlation with other areas and creative programs.

*Mus. Ed. 128. Music for the Elementary Classroom Teacher. (2-3)*

Prerequisite, Music 16 or consent of instructor. A study of the group activities and materials through which the child experiences music. The course is designed to aid both music specialists and classroom teachers. It includes an outline of objectives and a survey of instructional methods. (Grentzer, Henke.)

*Mus. Ed. 129. Methods of Class Instrumental Instruction. (2)*

Two one-hour laboratories and one lecture per week. Prerequisites, or concurrent registration in Music 80, 81. Organization of and techniques for teaching beginning instrumental classes in the public schools. (Berman.)

*Mus. Ed. 132. Music in the Secondary School. (2)*

Prerequisite, consent of instructor. A study of the vocal and instrumental programs in the secondary schools. A survey of the needs in general music and the relationship of music to the core curriculum. (Henke.)

*Mus. Ed. 139. Music for the Elementary School Specialist. (2)*

First semester. Prerequisite, consent of instructor. A survey of instructional materials; objectives; organization of subject matter; lesson planning; methods and procedures in singing, listening, rhythms, simple instruments, and creative activities for the music specialist in the elementary school. (Henke.)

*Mus. Ed. 155. Organization and Technique of Instrumental Class Instruction. (2)*

Prerequisite, consent of instructor. Practical instruction in the methods of tone production, tuning, fingering, and in the care of woodwind and brass instruments. A survey of the materials and published methods for class instruction. (Henderson.)

*Mus. Ed. 163. Band Techniques and Administration. (2)*

Prerequisites, Music 81 and 161. Two lectures and two laboratory hours per week. Intensive study of a secondary wind instrument and of rehearsal techniques. A survey of instructional materials, administrative procedures, and band pageantry will be included.

*Mus. Ed. 170. Methods and Materials for Class Piano Instruction. (2)*

The study of the principles and techniques of teaching class piano. The following



groups, beginning and advanced, will be used for demonstrations: elementary school children, junior and senior high school students, adults. Special emphasis will be placed on the analysis of materials.

*Mus. Ed. 171. String Teaching in the Public Schools. (2)*

A study of the problems of organizing and developing the string program in the public schools. Emphasis is placed on exploratory work in string instruments, on the study of teaching techniques, and on the analysis of music literature for solo, small ensembles, and orchestra. (Berman.)

*Mus. Ed. 173. The Vocal Music Teacher and School Organization. (2)*

Prerequisite, practice teaching or teaching experience. Study of the function of the vocal music teacher in the elementary and secondary schools. Students will serve as resource teachers for those enrolled in Mus. Ed. 139. Open to graduate students by permission of instructor. (Grentzer.)

*Mus. Ed. 175. Methods and Materials in Vocal Music for the High School. (2)*

Prerequisite, consent of instructor. A survey of suitable vocal and choral repertoire for the high school. Problems of diction, interpretation, tone production, and phrasing. The course is designed primarily for choral directors and teachers of voice classes. (Grentzer.)

*Mus. Ed. 180. Instrumental Seminar. (2)*

Prerequisite, consent of instructor. Problems in the music directing of public-school instrumental organizations. A study of representative orchestral, band, and small-ensemble scores, and of the teaching problems involved. (Jordan.)

*For Graduates*

*Mus. Ed. 200. Research Methods in Music and Music Education. (3)*

The application of methods of research to problems in the fields of music and music education. The preparation of bibliographies and the written exposition of research projects in the area of the student's major interest. (Grentzer.)

*Mus. Ed. 201. Administration and Supervision of Music in the Public Schools. (3)*

The study of basic principles and practices of supervision and administration with emphasis on curriculum construction, scheduling, budgets, directing of in-service teaching, personnel problems, and school-community relationships. (Grentzer.)

*Mus. Ed. 204. Current Trends in Music Education (Seminar). (2)*

A survey of current philosophies and objectives of music in the schools. The scope and sequence of the music curricula, vocal and instrumental, on the elementary and secondary levels. (Grentzer.)

*Mus. Ed. 205. Seminar in Vocal Music in the Elementary Schools. (2)*

A comparative analysis of current methods and materials used in the elementary schools. A study of the music curriculum as a part of the total school program, and of the roles of the classroom teacher and the music specialist. (Grentzer.)



*Mus. Ed. 206. Choral Conducting and Repertoire. (2)*

The study and reading of choral literature of all periods, including the contemporary, suitable for use in school and community choruses. Style, interpretation, tone quality, diction, rehearsal and conducting techniques are analyzed.

*Mus. Ed. 207. Seminar in Vocal Music in the Secondary Schools. (2)*

A comparative analysis of current methods and materials used in teaching junior and senior high-school classes in general music, history and appreciation, theory, and voice; and in directing choral groups and community singing. (Grentzer.)

*Mus. Ed. 208. The Teaching of Music Appreciation. (2)*

A study of the objectives for the elementary and secondary levels; the techniques of directed listening, the presentation of theoretical and biographical materials, course planning, selection and use of audio-visual aids, and library materials, and the correlation between music and other arts. (Ulrich.)

*Mus. Ed. 209. Seminar in Instrumental Music. (2)*

A consideration of acoustical properties and basic techniques of the instruments. Problems of ensemble and balance, intonation, precision, and interpretation are studied. Materials and musical literature for orchestras, bands, and small ensembles are evaluated. (Jordan.)

*Mus. Ed. 210. Advanced Orchestration and Band Arranging. (Seminar) (2)*

Prerequisite, Music 147 or the equivalent, or consent of the instructor. A study of arranging and transcription procedures in scoring for the orchestra and band. Special attention is given to the arranging problems of the instrumental director in the public schools. (Henderson.)

## SCIENCE EDUCATION

*\*Sci. Ed. 6. The Natural Sciences in the Elementary School. (2)*

Laboratory fee, \$2.00. Selecting, organizing, and teaching materials in the plant and animal world. For the elementary school teacher who needs help in identifying and making effective use of living materials brought to the classroom, assisting pupils to find answers to their questions, and planning other worthwhile science experiences. Extensive background in the subject matter of the biological sciences not required. (Blough.)

*\*Sci. Ed. 7. The Physical Sciences in the Elementary School. (2)*

Laboratory fee, \$2.00. Similar to the previous course except that problems for study are selected from the various fields of the physical sciences such as electricity and magnetism, weather, heat, light, sound, etc. Non-technical, comprehensive treatment intended to give background in subject matter and methods to equip teachers for elementary school science teaching. (Blough.)

Note: Sci. Ed. 6 and 7 replace Sci. Ed. 1, 2, 3, 4. Laboratory fees have been combined, making \$2.00 for each of the two courses instead of \$1.00 for each of the four courses.

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\*Students who have received four credits in Sci. Ed. 1, 2, 3 and 4 should not register for these courses.

*Sci. Ed. 105. Workshop in Science for Elementary Schools. (2-3)*

Laboratory fee, \$2.00. Designed to help teachers acquire general science understandings and to develop teaching materials for practical use in classrooms. Includes experiments, demonstrations, constructions, observations, field trips, and use of audio-visual materials. The emphasis is on content and method related to science units in common use in elementary schools. (Blough.)

*Ed. 247. Seminar in Science Education. (2)*

(See page 48.)

## SPECIAL EDUCATION

*Sp. Ed. 170. Introduction to Special Education. (3)*

Designed to give an understanding of the needs of all types of exceptional children, stressing preventive and remedial measures. (Haring.)

*Sp. Ed. 171. Characteristics of Exceptional Children. (3-6)*

A. Mentally Retarded. B. Gifted.

Studies the diagnosis, etiology, physical, social, and emotional characteristics of exceptional children. Describes how the educational program should be modified to utilize the full capacity of these children. (Haring.)

*Sp. Ed. 172. Education of Exceptional Children. (3-6)*

A. Mentally Retarded. B. Gifted.

Prerequisite, Sp. Ed. 171 or equivalent. Offers practical and specific methods of teaching exceptional children. Selected observation of actual teaching may be arranged. (Haring.)

*Sp. Ed. 173. Curriculum for Exceptional Children. (3-6)*

A. Mentally Retarded. B. Gifted.

Prerequisite, Sp. Ed. 171 or equivalent. Examines the principles and objectives guiding curriculum for exceptional children; gives experience in developing curriculum for these children; studies various curricula currently in use. (Haring.)

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Note: For courses in physical education and health education, see the catalog of the College of Physical Education, Recreation, and Health.

# FACULTY

1960-1961

## COLLEGE OF EDUCATION

GRACE L. ADAMS, *Assistant Professor of Education, Institute for Child Study.*  
B.S., University of Southern California, 1940; M.S., 1956.

WILLIAM E. AMOS, *Grant Foundation Fellow, Institute for Child Study.*  
B.S., Arkansas State Teachers College, 1949; M.A., University of Tulsa, 1950.

VERNON E. ANDERSON, *Professor of Education and Dean of the College of Education.*  
B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

JACK ANDREW BERGE, *Graduate Assistant in Industrial Education.*  
B.S., University of Maryland, 1959.

GLENN O. BLOUGH, *Professor of Education.*  
B.A., University of Michigan, 1929; M.A., 1932; LL.D., Central Michigan College of Education, 1950.

LUCILE BOWIE, *Associate Professor of Education, Institute for Child Study.*  
B.S., University of Maryland, 1942; M.A., Teachers College, Columbia University, 1946; ED.D., University of Maryland, 1957.

RICHARD M. BRANDT, *Associate Professor of Education, Institute for Child Study.*  
B.M.E., University of Virginia, 1943; M.A., University of Michigan, 1949; ED.D., University of Maryland, 1954.

ELEANOR A. BROOME, *Instructor in Childhood Education.*  
B.A., University of Maryland, 1943; M.ED., 1957.

LILLIAN W. BROWN, *Instructor in Childhood Education.*  
B.A., Lake Erie College, 1930.

MARIE D. BRYAN, *Associate Professor of Education*  
B.A., Goucher College, 1923; M.A., University of Maryland, 1945.

RICHARD H. BYRNE, *Professor of Education.*  
B.A., Franklin and Marshall College, 1938; M.A., Columbia University, 1947; ED.D., 1952.

DOROTHY B. CHESNEY, *Graduate Assistant in Education.*  
B.S., Pennsylvania State University, 1954; M.ED., Pennsylvania State University, 1956.

ANN MARY CIMINO, *Instructor in Education.*  
B.S., The Pennsylvania State University, 1954; M.ED., 1958.

PAUL CLARKE, *Human Development Fellow, Institute for Child Study.*  
B.S., Mt. St. Mary's College, 1954; M.ED., University of Maryland, 1958.

## Faculty

RITA S. COOK, *Graduate Assistant in Education.*

PH.D., University of Vienna, 1938.

EDMUND D. CROSBY, *Assistant Professor of Industrial Education.*

B.A., Western Michigan University, 1934; M.A., Colorado A. & M. College, 1941.

KENNETH E. DAWSON, *Graduate Assistant in Industrial Education.*

B.S., Virginia Polytechnic Institute, 1952; M.A., University of Virginia, 1955.

MARIE DENECKE, *Instructor in Education.*

B.A., Columbia University, 1938; M.A., University of Maryland, 1942.

ALPHORETTA SOUTHWORTH FISH, *Instructor in Education.*

B.S., State Teachers College, Edenboro, Pennsylvania, 1955; M.A., Western Michigan University, 1956.

JACQUELINE S. FRALLEY, *Graduate Assistant in Education.*

B.S., Rutgers University, 1944.

FLORITA GARCIA, *Graduate Assistant in Education.*

Normal Course, Philippine Normal College, 1941; B.S.E., Centro Escolar University, 1947; M.A., 1949; M.ED., University of Maryland, 1954.

HELEN GARSTENS, *Associate Director of the Junior High School Mathematics Project.*

B.A., Hunter College, 1932.

JACOB D. GOERING, *Assistant Professor of Education, Institute for Child Study.*

B.A., Bethel College, 1941; B.D., Bethany Seminary, 1949; PH.D., University of Maryland, 1959.

RICHARD M. GOOD, *Graduate Assistant in Education.*

A.B., Indiana University, 1952; M.S., 1953.

JEAN D. GRAMBS, *Lecturer in Education.*

B.A., Reed College, 1940; M.A., Stanford University, 1941; ED.D., 1948.

JOHN MARTIN GUNDERSON, *Graduate Assistant in Industrial Education.*

B.A., Western Washington College of Education, 1957.

DOROTHY HAMILTON, *Human Development Fellow, Institute for Child Study.*

B.A., Arkansas State College, 1943; M.A., University of Maryland, 1959.

NORRIS G. HARING, *Associate Professor of Education and Coordinator of Special Education Programs.*

B.A., Nebraska State Teachers College, 1948; M.A., University of Nebraska, 1950; ED.D., Syracuse University, 1956.

PAUL E. HARRISON, JR., *Associate Professor of Industrial Education.*

B.ED., Northern Illinois State College, 1942; M.A., Colorado State College, 1947; PH.D., University of Maryland, 1955.

- HERBERT H. HENKE, *Assistant Professor of Music Education and Music.*  
B.MUS.ED., Oberlin College, 1953; B.MUS., 1954; M.MUS.ED., 1954.
- IRVING WEYMOUTH HERRICK, JR., *Graduate Assistant in Industrial Education.*  
B.S., Gorham State Teachers College, Gorham, Maine, 1954.
- LAWRENCE D. HERVEY, *Graduate Assistant in Education.*  
B.S., Otterbein College, 1948.
- R. LEE HORNBACE, *Professor of Industrial Education and Dean of the Faculty.*  
B.S., State Teachers College, California, Pennsylvania, 1934; M.A., Ohio State University, 1936; PH.D., 1942.
- KENNETH O. HOVET, *Professor of Education.*  
B.A., St. Olaf College, 1926; PH.D., University of Minnesota, 1950.
- BETTY L. HOWALD, *Research Assistant, Special Education.*  
A.B., Harris Teachers' College, 1947; M.A., University of Michigan, 1955.
- JAMES L. HYMES, *Professor of Education.*  
B.A., Harvard College, 1934; M.A., Teachers College, Columbia University, 1936; ED.D., 1947.
- ECKHART A. JACOBSEN, *Associate Professor of Industrial Education.*  
Oswego State Teachers College, New York, 1937; M.S., Cornell University, 1946; PH.D., University of Connecticut, 1957.
- M. CLEMENS JOHNSON, *Associate Professor of Education.*  
B.S., University of Minnesota, 1943; M.A., 1950; PH.D., 1954.
- GERTRUDE G. JUSTISON, *Grant Foundation Fellow, Institute for Child Study.*  
B.S., University of Pittsburgh, 1942; M.S., Seton Hall University, 1949.
- JEANNE D. KAPPLER, *Instructor in Childhood Education.*  
B.S., Russell Sage College, 1940; M.ED., University of Maryland, 1958.
- MERVIN L. KEEDY, *Associate Director of the Junior High School Mathematics Project.*  
B.S., University of Chicago, 1946; M.A., University of Nebraska, 1950; PH.D., 1957.
- AFTAB KHAN, *Human Development Fellow, Institute for Child Study.*  
B.A., Muslim University, 1936; M.A., 1938; M.S., University of Wisconsin, 1939.
- WILLIS LLOYD KENDALL, *Graduate Assistant in Education.*  
B.S., Wayne State University, 1955; M.A., Miami University, 1958.
- L. DAVID KORB, *Lecturer in Industrial Education.*  
B.A., Brown University, 1939; M.A., Boston University, 1952.
- JOHN J. KURTZ, *Professor of Education, Institute for Child Study.*  
B.A., University of Wisconsin, 1935; M.A., Northwestern University, 1940; PH.D., University of Chicago, 1947.
- DAVID G. KYLE, *Grant Foundation Fellow, Institute for Child Study.*  
A.B., University of Denver, 1952; M.A., 1953.



## Faculty

DOROTHEA E. LAADT, *Instructor in Childhood Education.*

B.E., National College of Education, Evanston, Illinois, 1956.

HOWARD E. LAMB, *Grant Foundation Fellow, Institute for Child Study.*

A.A., Santa Rosa Junior College, 1952; A.B., San Francisco State College, 1954.

DONALD MALEY, *Professor and Head, Industrial Education.*

B.S., State Teachers College, California, Pennsylvania, 1943; M.A., University of Maryland, 1947; PH.D., 1950.

PAUL J. MANCHAK, *Graduate Assistant in Industrial Education.*

B.S., University of Maryland, 1957.

GEORGE L. MARX, *Assistant Professor of Education.*

B.A., Yankton College, South Dakota, 1953; M.A., State University of Iowa, 1956; PH.D., 1959.

RICHARD L. MATTESON, *Instructor in Education, Institute for Child Study.*

B.A., Knox College, Galesburg, Illinois, 1952; M.A., University of Maryland, 1955.

JOHN R. MAYOR, *Part-time Professor of Education and Mathematics, and Director, Junior High School Mathematics Project.*

B.S., Knox College, Galesburg, Illinois, 1928; M.A., University of Illinois, 1929; PH.D., University of Wisconsin, 1933.

L. MORRIS MC CLURE, *Professor of Education and Assistant Dean of the College of Education.*

B.A., Western Michigan University, 1940; M.A., University of Michigan, 1946; ED.D., Michigan State University, 1953.

GEORGE R. MERRILL, *Instructor in Industrial Education.*

B.S., University of Maryland, 1954; M.ED., 1955.

MADELAINE J. MERSHON, *Professor of Education, Institute for Child Study.*

B.S., Drake University, 1940; M.A., University of Chicago, 1943; PH.D., 1950.

SALLY R. MEYER, *Graduate Assistant in Education.*

B.A., Western Michigan University, 1957.

DOROTHY R. MOHR, *Professor of Physical Education.*

B.S., University of Chicago, 1932; M.A., 1933; PH.D., University of Iowa, 1944.

H. GERTHON MORGAN, *Professor of Education, Institute for Child Study.*

B.A., Furman University, 1940; M.A., University of Chicago, 1943; PH.D., 1946.

CHARLES W. NELSON, *Graduate Assistant in Education.*

B.S., University of Wisconsin, 1952; M.S., 1956.

CLARENCE A. NEWELL, *Professor of Educational Administration.*

B.A., Hastings College, Nebraska, 1935; M.A., Columbia University, 1939; PH.D., 1943.

EUGENE M. NUSS, *Grant Foundation Fellow, Institute for Child Study.*

B.S., Bloomsburg State Teachers College, 1949; M.ED., Temple University, 1952.

LEO W. O'NEILL, *Associate Professor of Education.*

B.A., University of Chicago, 1938; M.A., University of Kansas City, 1953; ED.D., University of Colorado, 1955.

REGINALD C. OREM, *Human Development Fellow, Institute for Child Study.*

B.A., University of Maryland, 1953; M.ED., 1958.

BETTY E. ORR, *Assistant Professor, Institute for Child Study.*

E.A., Beloit College, 1943; M.A., University of Chicago, 1945; PH.D., 1958.

ARTHUR S. PATRICK, *Professor of Business Education.*

B.E., Wisconsin State College, Whitewater, Wisconsin, 1931; M.A., University of Iowa, 1940; PH.D., American University, 1956.

BERNARD PECK, *Assistant Professor of Education, Institute for Child Study.*

B.A., Indiana University, 1939; M.A., Columbia University, 1941; ED.D., University of Maryland, 1957.

HUGH V. PERKINS, *Professor of Education, Institute for Child Study.*

B.A., Oberlin College, 1941; M.A., University of Chicago, 1946; PH.D., 1949; ED.D., New York University, 1956.

DANIEL A. PRESCOTT, *Professor of Education and Director, Institute for Child Study.*

B.S., Tufts College, 1920; M.ED., Harvard University, 1922; ED.D., 1923.

ROBERT G. RISINGER, *Associate Professor of Education.*

B.S., Ball State Teachers College, 1940; M.A., University of Chicago, 1947; ED.D., University of Colorado, 1955.

HENRY JAMES ROKUSEK, *Graduate Assistant in Industrial Education.*

B.S., Stout State College, Menomonie, Wisconsin, 1953; M.S., 1956.

ALVIN W. SCHINDLER, *Professor of Education.*

B.A., Iowa State Teachers College, 1927; M.A., University of Iowa, 1929; PH.D., 1934.

LYLE D. SCHMIDT, *Assistant Professor of Education.*

B.A., State Teachers College, St. Cloud, Missouri, 1955; A.M., University of Missouri, 1957; PH.D., University of Missouri, 1959.

CARL SCHRAMM, *Instructor in Industrial Education.*

B.S., University of Maryland, 1956.

MABEL S. SPENCER, *Assistant Professor of Home Economics Education.*

B.S., West Virginia University, 1925; M.S., 1946; ED.D., American University, 1959.

JACK SIMICH, *Graduate Assistant in Industrial Education.*

B.S., Northern Illinois State Teachers College, DeKalb, Illinois, 1953; M.A., 1959.

MARGARET A. STANT, *Assistant Professor of Childhood Education.*

B.S., University of Maryland, 1952; M.ED., 1955; A.P.C., George Washington University, 1959.

FRED R. THOMPSON, *Professor of Education, Institute for Child Study.*

B.A., University of Texas, 1929; M.A., 1939; ED.D., University of Maryland, 1952.

## Faculty

- WILLIAM F. TIERNEY, *Associate Professor of Industrial Education.*  
B.S., Teachers College of Connecticut, 1941; M.A., Ohio State University, 1949;  
ED.D., University of Maryland, 1952.
- VERNON A. TRYON, *Graduate Assistant in Education.*  
B.S., State University of New York, Oswego, New York, 1958.
- ORVAL L. ULRY, *Associate Professor of Education and Director of the Summer Session.*  
B.S., Ohio State University, 1938; M.A., 1944; PH.D., 1953.
- JAMES A. VAN ZWOLL, *Professor of School Administration.*  
B.A., Calvin College, Grand Rapids, Michigan, 1933; M.A., University of Michigan, 1937; PH.D., 1942.
- WALTER B. WAETJEN, *Professor of Education, Institute for Child Study.*  
B.S., State Teachers College, Millersville, Pennsylvania, 1942; M.S., University of Pennsylvania, 1947; ED.D., University of Maryland, 1951.
- HENRY WALBESSER, *Graduate Assistant in Education.*  
B.S., State University of New York, 1958.
- GEORGE M. WELLER, *Human Development Fellow, Institute for Child Study.*  
A.B., University of Kentucky, 1951.
- GLADYS A. WIGGIN, *Professor of Education.*  
B.S., University of Minnesota, 1929; M.A., 1939; PH.D., University of Maryland, 1947.
- WALTER R. WILLIAMS, III, *Graduate Assistant in Industrial Education.*  
B.S.E., University of Florida, 1955; M.ED., 1959.
- ALBERT W. WOODS, *Associate Professor of Physical Education.*  
B.S., University of Maryland, 1933; M.ED., 1949.
- JOOST YFF, *Graduate Assistant in Industrial Education.*  
B.S., Fitchburg State Teachers College, Fitchburg, Massachusetts, 1959.
- ERNEST C. YOUNG, *Human Development Fellow, Institute for Child Study.*  
B.A., Austin College, 1947; M.A., Southern Methodist University, 1948.

## COLLEGE OF EDUCATION COOPERATING STAFF MEMBERS

- ROSE MARIE GRENTZER, *Professor, Music.*
- HUBERT P. HENDERSON, *Assistant Professor, Music and Director of Bands.*
- H. PALMER HOPKINS, *Assistant Professor, Agricultural Education.*
- H. BRYCE JORDAN, *Assistant Professor, Music.*
- JOHN LEMBACH, *Associate Professor, Art.*
- EDWARD L. LONGLEY, JR., *Assistant Professor of Art, Practical Art.*
- JANE H. O'NEILL, *Instructor, Office Techniques and Management.*
- JAMES BROWN, *Instructor, Office Techniques and Management.*

## OFF-CAMPUS SUPERVISING TEACHERS, 1958-1959

EDYTHIE J. ADAMS, Silver Spring Intermediate School, Montgomery County.  
 LEONORA AIKEN, Bethesda-Chevy Chase High School, Montgomery County.  
 MAY ALDER, Lewisdale Elementary School, Prince George's County.  
 MAURICE L. ALLISON, Bladensburg Junior High School, Prince George's County.  
 BENJAMIN W. ALLNUTT, Bethesda-Chevy Chase High School, Montgomery County.  
 PAUL ANTETOMASO, No. 234, Baltimore.  
 EDNA A. ARNN, Suitland Junior High School, Prince George's County.  
 JEAN BAKER, Montgomery Blair High School, Montgomery County.  
 HELEN BARBOUR, Pinecrest School, Montgomery County.  
 INEZ BARGER, Thomas Stone School, Prince George's County.  
 RUTH BAUER, Northwestern High School, Prince George's County.  
 JOHN M. BASSETT, Sherwood High School, Montgomery County.  
 THOMAS C. BATSON, Bladensburg Junior High School, Prince George's County.  
 RALPH BEACH, Catonsville High School, Baltimore County.  
 PAULINE P. BEST, High Point High School, Prince George's County.  
 HELEN BIGGS, High Point High School, Prince George's County.  
 IMOGENE BINGMAN, Suitland Senior High School, Prince George's County.  
 JANE E. BIGBEE, Green Valley School, Prince George's County.  
 LORENE BISHOP, Eastern Junior High School, Montgomery County.  
 ALICE BLACK, Takoma Park Junior High School, Montgomery County.  
 GALVIN A. BLATT, Montgomery Blair High School, Montgomery County.  
 SAMUEL BOHINCE, Takoma Park Junior High School, Montgomery County.  
 ANGELINE BOISEN, N. H. Estates Elementary School, Montgomery County.  
 CHARLES BOLGIANO, Broome Junior High School, Montgomery County.  
 WALTER BOROWETZ, Greenbelt Junior High School, Prince George's County.  
 IRIS M. BOSLEY, Montgomery Hills Junior High School, Montgomery County.  
 SUSAN BOYER, Montgomery Blair High School, Montgomery County.  
 ESTHER BRADSHAW, High Point High School, Prince George's County.  
 DOROTHY W. BRETHOUWER, Westbrook Elementary School, Montgomery County.  
 MARY SUE BROADWAY, Sherwood High School, Montgomery County.  
 BETTY JEAN BRUNSTEIN, Northwestern High School, Prince George's County.  
 JOSEPH D. BRYAN, Buck Lodge Junior High School, Prince George's County.  
 ELIZABETH BUCK, Kensington Nursery School, Montgomery County.  
 WAYNE BURGEMEISTER, Kenwood Senior High School, Baltimore County.  
 JOHANNA BURGESS, Highland View Elementary School, Montgomery County.  
 JOHN E. BURK, Sherwood High School, Montgomery County.  
 CATHERINE BURKE, No. 234, Baltimore.  
 ELIZABETH BURLEY, Suitland High School, Prince George's County.  
 LAURA BURRESS, Broome Junior High School, Montgomery County.  
 ESTHER A. BURT, Wheaton High School, Montgomery County.  
 CARL BUTKUS, Bladensburg Senior High School, Prince George's County.  
 CHARLES BUTTERFIELD, Bethesda-Chevy Chase High School, Montgomery County.  
 ROBERT E. CALLAHAN, Bladensburg Senior High School, Prince George's County.  
 JOHN CANNING, Four Corners School, Montgomery County.  
 FAYE CANTER, Viers Mill Elementary School, Montgomery County.  
 OLIVE E. CARR, Broome Junior High School, Montgomery County.  
 PHILIP CIFIZZARI, Bladensburg High School, Prince George's County.  
 MARION CLOSE, Westbrook School, Montgomery County.  
 DOROTHY COBURN, Montgomery Knolls, Montgomery County.  
 MARGUERITE H. COLLIER, High Point High School, Prince George's County.



## Faculty

DORIS COMBY, Benjamin Stoddert Junior High School, Prince George's County.  
JEWELL CREIGHTON, Woodside Elementary School, Montgomery County.  
BEATRICE CROCKER, Kensington Junior High School, Montgomery County.  
GEORGE CROSBY, Hyattsville Junior High School, Prince George's County.  
FLORENCE G. CROSSAN, Stephen Knolls, Montgomery County.  
JEAN B. CURLEY, Northwood High School, Montgomery County.  
EDNA E. D'ANDELET, Lewisdale Elementary School, Prince George's County.  
RUTH DALY, Rosemary Hills Elementary School, Montgomery County.  
JAMES M. DAVIS, Bethesda-Chevy Chase High School, Montgomery County.  
VERN DAVIS, Hyattsville Junior High School, Prince George's County.  
ROBERT DERBYSHIRE, Woodburn Junior High School, Baltimore City.  
GEORGE H. DETWEILER, Montgomery Blair High School, Montgomery County.  
JAMES DIETZ, Mt. Rainier Junior High School, Prince George's County.  
NICHOLAS G. DOVANS, Bladensburg Senior High School, Prince George's County.  
ELIZABETH DOWNING, College Park Elementary School, Prince George's County.  
MARY DRAEWELL, Kaywood Gardens Nursery and Kindergarten, Inc., Prince George's County.  
OSCAR DUBOIS, Gaithersburg High School, Montgomery County.  
VIRGINIA DUVAL, Catonsville High School, Baltimore County.  
JULIAN DYKE, Edmondson Heights Senior High School, Baltimore City.  
BARBARA R. EHRLICH, Glen Haven Elementary School, Montgomery County.  
ROSALINE S. ELLER, Lewisdale School, Prince George's County.  
MARY ENRIGHT, Montgomery Blair High School, Montgomery County.  
ALLEN EVRY, Wheaton High School, Montgomery County.  
LOIS FASIG, Hyattsville Junior High School, Prince George's County.  
GLADYS D. FELDESMAN, Montgomery Blair High School, Montgomery County.  
EDITH FERRENS, No. 234, Baltimore City.  
BRUCE FLOWERS, West Frederick Junior High School, Frederick County.  
BOWYER E. FORSYTHE, Hyattsville Junior High School, Prince George's County.  
CATHERINE W. FOX, Northwood High School, Montgomery County.  
GERALD P. FRICK, Mt. Rainier Junior High School, Prince George's County.  
JEANNETTE W. GALAMBOS, Rock Creek Gardens Cooperative Nursery School, Montgomery County.  
MARY GARDELLA, Northwood High School, Montgomery County.  
LALA H. GARRITTY, MacDonald Knolls School, Montgomery County.  
JANICE GARROTT, No. 241 Baltimore City.  
BARBARA E. GAY, Rollingcrest Junior High School, Prince George's County.  
GEORGE P. GEORGE, Rollingcrest Junior High School, Prince George's County.  
JOSEPH J. GIEDA, Northwestern Senior High School, Montgomery County.  
ELIZABETH M. GIFFORD, Northwestern High School, Prince George's County.  
CATHERINE R. GIRA, Catonsville Senior High School, Baltimore County.  
INEZ M. GLEASON, Beltsville Elementary School, Prince George's County.  
FLORENCE R. GOOTENBERG, Garrett Park Cooperative Nursery School, Montgomery County.  
ETTA RAY GRIFFIN, Hollywood Elementary School, Prince George's County.  
GEORGE E. GRONINGER, North Bethesda Junior High School, Montgomery County.  
NICHOLAS GUIDARA, Bethesda-Chevy Chase High School, Montgomery County.  
PAULINE GWYN, No. 245 School, Baltimore City.  
ANN VIRGINIA HALL, Rollingcrest High School, Prince George's County.  
ERMA LOUISE HALLIDAY, Four Corners School, Montgomery County.  
LOIS T. HARDING, Northwestern Senior High School, Prince George's County.



CAROLINE HARDY, Northwestern High School, Prince George's County.  
 LOUISE HARMON, Montgomery Blair High School, Montgomery County.  
 ELIZABETH HARRIS, University Park Elementary School, Prince George's County.  
 WILLIAM H. HARRIS, Northwestern Senior High School, Prince George's County.  
 FRIEDA HARRIS, Carole Highlands Elementary School, Prince George's County.  
 GERTRUDE HARRISON, Wheaton Senior High School, Montgomery County.  
 GLENICE HARSTAD, Glenridge Junior High School, Prince George's County.  
 LUCILLE HATFIELD, Pocomoke High School, Worcester County.  
 JOHN EDWIN HAWKINSON, Bladensburg Junior High School, Prince George's County.  
 MARY J. HEAD, Rollingcrest Junior High School, Prince George's County.  
 DIANA H. HEARD, Bethesda-Chevy Chase Senior High School, Montgomery County.  
 ESTHER HEATH, University Park Elementary School, Prince George's County.  
 MYNA LEE HELTSLEY, Eastern Junior High School, Montgomery County.  
 STANLEY P. HENRY, Takoma Park Junior High School, Montgomery County.  
 ROGENE HIGGINS, Lewisdale Elementary School, Prince George's County.  
 ELEANOR S. HODGES, Greenbelt Cooperative Nursery School, Prince George's County.  
 MARLEY HOFFMAN, Bladensburg Senior High School, Prince George's County.  
 MARGARET A. HOGAN, Arbutus Junior High School, Baltimore County.  
 RUTH K. HOLSTEIN, Silver Spring Nursery School, Inc., Montgomery County.  
 BERNICE HOWELL, High Point High School, Prince George's County.  
 CHARLES L. HUDSON, Suitland Senior High School, Prince George's County.  
 SALLY L. HUDSON, Larchmont School, Montgomery County.  
 LUCILLE A. IRWIN, Glenside Cooperative Kindergarten, Montgomery County.  
 RUTH Y. IVERS, J. Enos Ray Kindergarten, Prince George's County.  
 NANCY JANNENGA, Cheverly-Tuxedo/Happy Acres School, Prince George's County.  
 MAE S. JEMISON, Takoma Park Junior High School, Montgomery County.  
 BARBARA R. JONES, Mt. Rainier Junior High School, Prince George's County.  
 DONALD KAUFMAN, Northwestern High School, Prince George's County.  
 ARLENE KAY, Glen Haven Elementary School, Montgomery County.  
 ALAN KEENY, Montgomery Hills Junior High School, Montgomery County.  
 DEVONA KEITHLEY, Northwestern High School, Prince George's County.  
 BABETTE M. KELEHER, Rolling Terrace Elementary School, Montgomery County.  
 MAURINE L. KEMPFFER, Glenbrook Co-operative Nursery School,, Montgomery County.  
 CORILDA C. KEYSER, Eastern Suburban Junior High School, Montgomery County.  
 ELAYNE KLUGMAN, No. 234, Baltimore City.  
 ALICE KOCH, Montgomery Blair High School, Montgomery County.  
 RUTH KORNICK, Hyattsville Elementary School, Prince George's County.  
 KATHERINE S. KRIEMELMEYER, Takoma Park Nursery School, Montgomery County.  
 MARY LABBE, Eastern Suburban Junior High School, Montgomery County.  
 MARGARET C. LABOVITZ, Green Acres School, Montgomery County.  
 JOE LAMANSKI, Northwestern High School, Prince George's County.  
 AGNES LAW, Green Valley Elementary School, Prince George's County.  
 SALLY LEFFELL, Dundalk Senior High School, Baltimore County.  
 HAZEL G. LELAND, Simon Elementary School, Washington, D. C.  
 CHRIS B. LEWALLEN, Bladensburg Senior High School, Prince George's County.  
 MILDRED K. LIMBURG, Somerset Elementary School, Montgomery County.  
 BESSIE LIND, No. 234, Baltimore City.  
 ISABELLE LOWE, Bladensburg High School, Prince George's County.  
 CARRIE F. LUSBY, Montgomery Blair High School, Montgomery County.  
 MARY C. LYNCH, Montgomery Jewish Community Nursery School, Montgomery County.  
 MARY V. LYNN, Rollingcrest Junior High School, Prince George's County.

## Faculty

- MARJORIE M. MC CLELLAND, *Silver Spring Co-operative Nursery School, Montgomery County.*
- LAURA N. MC LAUGHLIN, *Bethesda-Chevy Chase Cooperative Nursery School, Montgomery County.*
- C. JANE MACKEY, *O. W. Phair Elementary School, Prince George's County.*
- FRANKIE Y. MC MILLEN, *High Point High School, Prince George's County.*
- JOYCE W. MACZIS, *Catonsville Junior High School, Baltimore County.*
- JOHN E. MALEY, *Richard Montgomery High School, Montgomery County.*
- MARGARET MC AVOY, *Laurel Senior High School, Prince George's County.*
- HORACE MANN, *Northwestern High School, Prince George's County.*
- ROBERT E. MATULA, *La Plata High School, Charles County.*
- NANCY MELLON, *Rock Creek Garden Nursery School, Montgomery County.*
- MARCELLA F. MESARICK, *Benjamin Stoddert Junior High School, Prince George's County.*
- GEORGE G. MESSICK, *Bethesda-Chevy Chase High School, Montgomery County.*
- SYLVIA MICHAELSON, *No. 64, Baltimore City.*
- CHRISTINE MILLER, *J. Enos Ray Elementary School, Prince George's County.*
- MADELINE L. MILLS, *Suitland Junior High School, Prince George's County.*
- DANIEL MORAN, *Kenwood High School, Baltimore County.*
- MARGARET C. MOORE, *Wheaton High School, Montgomery County.*
- EUGENE V. MORAN, *Northwestern High School, Prince George's County.*
- THOMAS MULKEY, *High Point High School, Prince George's County.*
- CARRIE ELIZABETH MORTON, *Thomas Stone Elementary School, Prince George's County.*
- ROBERT M. MULLIGAN, *High Point High School, Prince George's County.*
- VESTAL MOUSER, *Rollingwood School, Montgomery County.*
- JOSEPH M. MURPHY, *Northwestern High School, Prince George's County.*
- ROSE MARIE MURPHY, *Mt. Rainier Junior High School, Prince George's County.*
- ELMER MUTH, *Wheaton Senior High School, Montgomery County.*
- MARGARET NAUMANN, *No. 69, Baltimore City.*
- CHLOE W. NEWELL, *Garrett Park School, Montgomery County.*
- FRANCES H. NUTTELL, *Bradley Elementary School, Montgomery County.*
- TERESA OLSEN, *Bladensburg Senior High School, Prince George's County.*
- LUCILLE OOSTERHOUS, *J. Enos Ray Elementary School, Prince George's County.*
- KATHRYN ORTENZIO, *University Park Elementary School, Prince George's County.*
- EARL L. PALMATIER, *Glenridge Junior High School, Prince George's County.*
- DANIEL PALUMBO, *Northwestern High School, Prince George's County.*
- DOROTHY SEBREE PELLINO, *Suitland Senior High School, Prince George's County.*
- WILLIAM H. PENN, *Paul Junior High School, Washington, D. C.*
- HATTIE W. PETERSON, *Highland Elementary School, Montgomery County.*
- CHESTER PETRANEK, *Northwood Senior High School, Montgomery County.*
- JEAN K. PHIFER, *Walter Johnson Senior High School, Montgomery County.*
- ANGELA PIEPER, *No. 247, Baltimore City.*
- ANITA S. POPOLO, *Bladensburg Senior High School, Prince George's County.*
- JOHN PRESTON, *Richard Montgomery Senior High School, Montgomery County.*
- EVANGELO PRIOVOLOS, *Bethesda-Chevy Chase High School, Montgomery County.*
- ANNE PUTNAM, *Northwestern High School, Prince George's County.*
- DONALD REDMILES, *Glenridge Junior High School, Prince George's County.*
- LOIS C. REED, *Bannockburn Elementary School, Montgomery County.*
- MARJORIE T. REESE, *Lewisdale Elementary School, Prince George's County.*
- NANCY REEVES, *Takoma Park Junior High School, Montgomery County.*
- KATHELEEN P. REHANEK, *Northwestern High School, Prince George's County.*

EVELYN REID, *Montgomery Hills Junior High School, Montgomery County.*  
 GIRARD REYNOLDS, *Montgomery Blair High School, Montgomery County.*  
 ROBERT RHINEHART, *Pinlco Junior High School, Baltimore City.*  
 ALMA RICH, *Ager Road Elementary School, Prince George's County.*  
 ALFRED ROGAN, *Northwood Senior High School, Montgomery County.*  
 ROCCO F. RONCO, *Suitland Junior High School, Prince George's County.*  
 JAMES P. ROULEAU, *Northwood High School, Montgomery County.*  
 JAMES A. RUCKERT, *University Park Elementary School, Prince George's County.*  
 ROBERT S. SANFORD, *Wheaton High School, Montgomery County.*  
 KENNETH M. SCALLON, *Eastern Junior High School, Montgomery County.*  
 JAMES E. SCHALLMO, *Eastern Junior High School, Montgomery County.*  
 JOHN SCOTT, *Takoma Park Junior High School, Montgomery County.*  
 SALLIE W. SCOTT, *Northwood High School, Montgomery County.*  
 EVELYN E. SHANK, *Hyattsville Junior High School, Prince George's County.*  
 NORMA JEANE SHEARER, *Montgomery Hills Junior High School, Montgomery County.*  
 SARA M. SHEGOYUE, *Bladensburg Senior High School, Prince George's County.*  
 E. FAYE SHERRY, *Montgomery Blair High School, Montgomery County.*  
 IRENE M. SILVERSTEIN, *Rollingcrest Junior High School, Prince George's County.*  
 BARBARA SINCOFF, *Rosemary Hills School, Montgomery County.*  
 SARAH K. SKRAMSTAD, *Westmoreland Hills Cooperative Nursery, Montgomery County.*  
 DONALD SMITH, *High Point High School, Prince George's County.*  
 ELEANOR B. SMITH, *Broad Acres Elementary School, Montgomery County.*  
 ELLIE SMITH, *Broad Acres Elementary School, Montgomery County.*  
 JOAN SMITH, *Hillcrest Heights Elementary School, Prince George's County.*  
 ELIZABETH SMITHER, *Montgomery Hills High School, Montgomery County.*  
 ROSE PREUSS SOWDER, *Sherwood High School, Montgomery County.*  
 DOROTHY STACKHOUSE, *Highland View School, Montgomery County.*  
 VIRGINIA K. STANTON, *Laurel High School, Prince George's County.*  
 NARISSA STEEL, *Bladensburg Junior High School, Prince George's County.*  
 HELEN SULLIVAN, *Laurel Senior High School, Prince George's County.*  
 LEON M. SWART, *Madascus High School, Montgomery County.*  
 ALLEN A. SWICK, *Walter Johnson Senior High School, Montgomery County.*  
 LOUELLA TATEM, *Pocomoke High School, Worcester County.*  
 CAROL N. TEFFT, *Bethesda-Chevy Chase Cooperative Nursery School, Montgomery County.*  
 DOUGLAS H. TELLER, *Belt Junior High School, Montgomery County.*  
 MARY THEOFIELD, *Montgomery Blair School, Montgomery County.*  
 ALINE TOMPKINS, *College Park Elementary School, Prince George's County.*  
 MARY TONER, *Westbrook School, Montgomery County.*  
 JEANNETTE TOOMEY, *Lewisdale Elementary School, Prince George's County.*  
 FRANK TRACY, *Glenridge Junior High School, Prince George's County.*  
 KATHRYN TRAHAN, *No. 245, Baltimore City.*  
 WILFRED RUSSELL TROXEL, *Montgomery Hills Junior High School, Montgomery County.*  
 J. BRUCE TURNER, *Dundalk High School, Baltimore County.*  
 LEOTA TYLER, *Langley Park Elementary School, Prince George's County.*  
 EDGAR RAY ULMER, *High Point High School, Prince George's County.*  
 DOROTHEA H. UMBACH, *Newport Junior High School, Montgomery County.*  
 WILLIAM E. VAUGHAN, *Glenridge Junior High School, Prince George's County.*  
 HAROLD ROBERT VEIT, *Eastern Junior High School, Montgomery County.*  
 ESTHER H. VOGEL, *Suitland Junior High School, Prince George's County.*  
 EULA W. WAKE, *Rock Creek Forest School, Montgomery County.*

## Faculty

MARY F. WALDRON, Glenbrook Nursery School, Montgomery County.  
EVERETT Q. WATERMAN, Bladensburg Junior High School, Prince George's County.  
HELMA J. WEATHERHOLTZ, Howard County Senior High School, Howard County.  
LORETTA WELLS, College Park Elementary School, Prince George's County.  
GRETCHEN WHITNEY, No. 242, Northwood School, Baltimore City.  
MARY FRANCES WILLIAMS, Oakview Elementary School, Montgomery County.  
MARY LEE WILLIAMS, J. Enos Ray Elementary School, Prince George's County.  
JACK WILLARD, High Point High School, Prince George's County.  
HARRYETTE G. WILLIAMS, North Bethesda Junior High School, Montgomery County.  
WILBURN KYLE WILSON, Northwood Junior-Senior High School, Montgomery County.  
THELMA WISNOR, Milford Mill High School, Baltimore County.  
JAMES WOLFE, Laurel High School, Prince George's County.  
HUGH R. WOOD, JR., Mt. Rainier Junior High School, Prince George's County.  
JEAN J. WOOTON, Garden Nursery School, Montgomery County.  
WILLIAM D. YARNALL, Northwestern Senior High School, Prince George's County.  
LEURA YOUNKER, Wyngate School, Montgomery County.  
PEGGY B. ZIRKLE, Rollingcrest Junior High School, Prince George's County.



# COLLEGE of ENGINEERING

Catalog Series 1960-1961



UNIVERSITY OF MARYLAND

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# UNIVERSITY CALENDAR

## FALL SEMESTER 1959

### JANUARY 1960

- 4 Monday—Christmas Recess Ends 8 a.m.
- 20 Wednesday—Pre-Examination Study Day
- 21-27 Thursday to Wednesday, inclusive—Fall Semester Examinations

## SPRING SEMESTER 1960

### FEBRUARY

- 1-5 Monday to Friday—Spring Semester Registration
- 8 Monday—Instruction Begins
- 22 Monday—Washington's Birthday Holiday

### MARCH

- 25 Friday—Maryland Day

### APRIL

- 14 Thursday—Easter Recess Begins After Last Class
- 19 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 18 Wednesday—Military Day
- 26 Thursday—Pre-Examination Study Day

- May 27- } Friday to Friday, inclusive—Spring Semester Examinations
- June 3 }
- 29 Sunday—Baccalaureate Exercises
- 30 Monday—Memorial Day, Holiday

### JUNE

- 4 Saturday—Commencement Exercises

## SUMMER SESSION 1960

### JUNE 1960

- 27 Monday—Summer Session Registration
- 28 Tuesday—Summer Session Begins

### AUGUST

- 5 Friday—Summer Session Ends

## SHORT COURSES 1960

### JUNE 1960

- 20-25 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 8-13 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 6-9 Tuesday to Friday—Firemen's Short Course

# UNIVERSITY CALENDAR

## FALL SEMESTER 1960

### SEPTEMBER

- 12-16 Monday to Friday—Fall Semester Registration
- 19 Monday—Instruction Begins

### NOVEMBER

- 23 Wednesday—Thanksgiving Recess Begins After Last Class
- 28 Monday—Thanksgiving Recess Ends 8 a.m.

### DECEMBER

- 20 Tuesday—Christmas Recess Begins

### JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day Holiday
- 25 Wednesday—Pre-Examination Study Day

- Jan. 26-1 } Thursday to Wednesday, inclusive—Fall Semester Examinations

## SPRING SEMESTER 1961

### FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday Holiday

### MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

### APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 17 Wednesday—Military Day
- 30 Tuesday—Memorial Day, Holiday

### JUNE

- 2 Friday—Pre-Examination Study Day
- 4 Sunday—Baccalaureate Exercises
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 10 Saturday—Commencement Exercises

## SUMMER SESSION 1961

### JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

### AUGUST

- 4 Friday—Summer Session Ends

## SHORT COURSES 1961

### JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 7-12 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

# BOARD OF REGENTS

## and

### MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK <i>Chairman</i> .....	1966
McCormick and Company, 414 Light Street, Baltimore 2	
EDWARD F. HOLTER <i>Vice-Chairman</i> .....	1968
The National Grange, 744 Jackson Place, N.W., Washington 6	
B. HERBERT BROWN <i>Secretary</i> .....	1960
The Baltimore Institute, 10 West Chase Street, Baltimore 1	
HARRY H. NUTTLE <i>Treasurer</i> .....	1966
Denton	
LOUIS L. KAPLAN <i>Assistant Secretary</i> .....	1961
5800 Park Heights Avenue, Baltimore 15	
ENOS S. STOCKBRIDGE <i>Assistant Treasurer</i> .....	1960
10 Light Street, Baltimore 2	
THOMAS W. PANGBORN .....	1965
The Pangborn Corporation, Pangborn Blvd., Hagerstown	
THOMAS B. SYMONS .....	1963
Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	
C. EWING TUTTLE .....	1962
907 Latrobe Building, Charles and Read Streets, Baltimore 2	
WILLIAM C. WALSH .....	1968
Liberty Trust' Building, Cumberland	
MRS. JOHN L. WHITEHURST.....	1967
4101 Greenway, Baltimore 18	

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Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.



## OFFICERS OF ADMINISTRATION

### *Principal Administrative Officers*

WILSON H. ELKINS, *President*

B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936;  
D. PHIL., 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBACE, *Dean of the Faculty*

B.S., State Teachers College, California, Pa., 1934; M.A., Ohio State University, 1936;  
PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

### *Emeritus*

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

### *Administrative Officers of the Schools and Colleges*

MYRON S. AISENBERG, *Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940;  
ED.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University  
of Denver, 1942; M.B.A. in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agricultural Experiment Station and Head, Department  
of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D.,  
University of Maryland, 1933.

ROGER HOWELL, *Dean of the School of Law*

B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland,  
1917.

WILBERT J. HUFF, *Director, Engineering Experiment Station*

B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale Uni-  
versity, 1917; D.SC. (HON.), Ohio Northern University, 1927.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945;  
PH.D., Pennsylvania State University, 1953.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

PAUL E. NYSTROM, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A.,  
Harvard University, 1948; D.P.A., 1951.

J. FREEMAN PYLE, *Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

LEON P. SMITH, *Dean of the College of Arts and Sciences*

B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930;  
Diplome de l'Institut de Touraine, 1932.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical  
Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929;  
PH.D., (HON.), University of Louisville, 1946.

### *General Administrative Officers*

G. WATSON ALGIRE, *Director of Admissions and Registrations*

B.A., University of Maryland, 1930; M.S., 1931.

THEODORE R. AYLESWORTH, *Professor of Air Science and Head, Department of  
Air Science*

B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania, 1949.

NORMA J. AZLEIN, *Registrar*

B.A., University of Chicago, 1940.

B. JAMES BORRESON, *Executive Dean for Student Life*  
B.A., University of Minnesota, 1944.

DAVID L. BRIGHAM, *Director of Alumni Relations*  
B.A., University of Maryland, 1938.

C. WILBUR CISSEL, *Director of Finance and Business*  
B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.

WILLIAM W. COBEY, *Director of Athletics*  
A.B., University of Maryland, 1930.

LESTER M. DYKE, *Director of Student Health Service*  
B.S., University of Iowa, 1936; M.D., University of Iowa, 1926.

GEARY F. EPPLEY, *Dean of Men*  
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.

HARRY D. FISHER, *Comptroller and Budget Officer*  
B.S., University of Maryland, 1943.

GEORGE W. FOGG, *Director of Personnel*  
B.A., University of Maryland, 1926; M.A., 1928.

ROBERT J. MCCARTNEY, *Director of University Relations*  
B.A., University of Massachusetts, 1941.

GEORGE W. MORRISON, *Associate Director and Supervising Engineer Physical Plant (Baltimore)*  
B.S., University of Maryland, 1927; E.E., 1931.

HOWARD ROVELSTAD, *Director of Libraries*  
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S. Columbia University, 1940.

ADELE H. STAMP, *Dean of Women*  
B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*  
B.S., University of Maryland, 1933.

### *Division Chairmen*

JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*  
B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.

HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*  
B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.

WILBERT J. HUFF, *Chairman of the Division of Physical Sciences*  
B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale University, 1917; D.SC., (HON.), Ohio Northern University, 1927.

CHARLES E. WHITE, *Chairman of the Lower Division*  
B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.

ADOLF E. ZUCKER, *Chairman of the Division of Humanities*  
B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.

## CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

### GENERAL COMMITTEE ON EDUCATIONAL POLICY

Dr. Ronald Bamford (Graduate School), *Chairman*

### COMMITTEE ON ADMISSIONS

Dr. Russell G. Brown (Agriculture), *Chairman*

### COMMITTEE ON INSTRUCTIONAL PROCEDURES

Dr. Ronald Bamford (Graduate School), *Chairman*

### COMMITTEE ON SCHEDULING AND REGISTRATION

Dr. Robert Rappleye (Agriculture), *Chairman*

### COMMITTEE ON PROGRAMS, CURRICULA AND COURSES

Dr. Irvin C. Haut (Graduate School), *Chairman*

### COMMITTEE ON SCHOLARSHIPS AND GRANTS-IN-AID

Dr. Paul Nystrom (Agriculture), *Chairman*

### COMMITTEE ON FACULTY RESEARCH

Dr. Edward J. Herbst (Medicine), *Chairman*

### COMMITTEE ON PUBLIC FUNCTIONS AND COMMENCEMENTS

Mr. B. James Borreson (Executive Dean for Student Life), *Chairman*

### COMMITTEE ON LIBRARIES

Dr. Charles Murphy (Arts and Sciences), *Chairman*

### COMMITTEE ON UNIVERSITY PUBLICATIONS

Dr. Charles A. Taff (Business and Public Administration), *Chairman*

### COMMITTEE ON STUDENT LIFE AND ACTIVITIES

Dr. L. Morris McClure (Education), *Chairman*

### COMMITTEE ON STUDENT PUBLICATIONS AND COMMUNICATIONS

Dr. Franklin Cooley (Arts and Sciences), *Chairman*

### COMMITTEE ON STUDENT DISCIPLINE

Dr. Allan J. Fisher (Business and Public Administration), *Chairman*

### COMMITTEE ON RELIGIOUS LIFE

Professor Louis E. Otts (Engineering), *Chairman*

### COMMITTEE ON STUDENT HEALTH AND WELFARE

Dr. Marvin H. Eyler (Physical Education), *Chairman*

### COMMITTEE ON STUDENT EMPLOYMENT AND SELF-HELP

Dr. Warren R. Johnson (Physical Education), *Chairman*

### COMMITTEE ON INTERCOLLEGIATE COMPETITION

Dr. Clyne S. Shaffner (Agriculture), *Chairman*

### COMMITTEE ON PROFESSIONAL ETHICS, ACADEMIC FREEDOM AND TENURE

Dr. Peter Lejins (Arts and Sciences), *Chairman*

### COMMITTEE ON APPOINTMENTS, PROMOTIONS AND SALARIES

Dr. William E. Bickley (Agriculture), *Chairman*

### COMMITTEE ON FACULTY LIFE AND WELFARE

Dr. Guy B. Hathorn (Business and Public Administration), *Chairman*

### COMMITTEE ON MEMBERSHIP AND REPRESENTATION

Dr. Joseph C. Biddix (Dentistry), *Chairman*

## THE COLLEGE

**F**OUR-YEAR PROGRAMS OUTLINED IN THIS CATALOG LEAD TO THE DEGREE of Bachelor of Science and Bachelor of Science with curriculum designation in aeronautical engineering, chemical engineering, civil engineering, electrical engineering, mechanical engineering, and fire protection. The engineering programs integrate these elements: (1) *basic sciences* including mathematics, physics, chemistry; (2) *engineering sciences* including mechanics of solids and fluids, engineering materials, thermodynamics, electricity and magnetism . . .; (3) *professional studies* in aeronautical, chemical, civil, electrical or mechanical engineering; (4) *liberal arts and social studies* in the American Civilization Program; and (5) certain other required subjects including air science and physical activities.

Each program lays a broad base for *continued learning* after college in professional practice, in business or industry, in public service, or in graduate study and research. Representative work that engineering graduates do is suggested in the following paragraphs.

The aeronautical engineer deals with problems related to transporting people and things by air and through space. Aerodynamics, thermodynamics, and the mechanics of fluids and solids are among his basic sciences. He may apply them in some phase of planning or producing airplanes, missiles, or rockets, or in devising means to sustain and control their flight.

The chemical engineer applies chemistry to development and economic production of industrial chemicals, fuels, modern synthesis and certain alloys. He also applies mechanics, thermodynamics, reaction kinetics and aspects of nuclear science to unit operations and processes which are fundamental in the design and operation of industries in which material undergoes a change in its identity. He serves as a research worker, operator, manager, executive or consultant.

The civil engineer is primarily a planner, a designer, a builder, and a manager of public works and private enterprise. His professional service plays a major role in designing, supervising construction, or managing virtually every large building, bridge, dam, highway, railway, airport, water supply, waste disposal system, city plan, industrial plant, public works project .

The electrical engineer puts mathematics and the physical sciences to practical use in designing systems that generate, transmit, and distribute electrical energy; to transmit and receive "intelligence," as for example by telephone, radio, radar, television and computers; and to regulate and control mechanical and industrial processes by electronics and servomechanisms.

The mechanical engineer figures ways to transmit power economically by heat or by mechanical systems. He applies the mechanics of fluids and solids, thermodynamics, and an understanding of the behavior of engineering materials under different conditions. As a professional engineer he devises processes for industrial production. As an industrial agent he serves as a supervisor, manager, or sales representative.



## General Information

The specialist in fire protection is concerned with scientific, technical, and supervisory problems involved in safeguarding life and property from loss due to fire, explosion, and related hazards.

### ADMISSION REQUIREMENTS

Young men and women who wish to become *professional engineers* should enroll in an *academic* program in high school. A good academic record in high school is a basic requirement. Subjects that are recommended for admission are these

<i>Subjects</i>	<i>Recommended</i> 4 units	<i>Acceptable</i> 4 units
English		
Mathematics (college preparatory)—including algebra (2), plane geometry (1), and solid geometry, trigonometry, or advanced mathematics	3½	3½
History and social sciences	2	1
Physical sciences	2	1
Foreign language—German or French	2	0
Unspecified academic subjects or suitable electives	2½	6½
	<hr/>	<hr/>
Total	16	16

A complete statement of admission requirements and policies will be found in *An Adventure in Learning*. Application for admission should be made to the Director of Admissions, University of Maryland, College Park, Maryland.

### ADVENTURE IN LEARNING

All freshmen in the College of Engineering enroll in essentially the same subjects as detailed under Curricula in this catalog.

Each student will select his major-line department before he begins his sophomore year's work. Thereafter he will pursue the approved program of his department which leads to the bachelor's degree.

Advanced students who show promise of creativity and leadership in engineering, in the engineering sciences, and in teaching and research, are encouraged to continue in a program of graduate study leading to master's and doctor's degrees. There is an acute shortage of engineers with earned doctor's degrees. Able men and women *with gumption* will find challenging opportunities if they have such top-level preparation. The best time to plan and to begin preparing for these top-level opportunities is while one is in high school. Parents and teachers can help by leading, by pointing ways, and by maintaining proper standards of performance and conduct. But the lifelong *adventure in learning*, which is the true characteristic of the well-educated man or woman, demands systematic mental exercise throughout life. "Chance favors the prepared mind!"

## COSTS

Annual costs of attending the University are about as follows: \$185.00 fixed charges; \$101.00 special fees; \$400.00 board; \$210.00 to \$240.00 lodging for Maryland residents, or \$260.00 to \$290.00 for residents of other states and countries. A matriculation fee of \$10.00 is charged for all new students. A charge of \$300.00 is assessed to all students who are non-residents of the State of Maryland. A detailed statement of fees and expenses is printed in the University publication, *An Adventure in Learning*.

## AIR SCIENCE INSTRUCTION

The Basic Air Science program must be completed successfully by all male students unless they are specifically exempted under University rules. *It is a prerequisite for graduation and it must be taken by all eligible students during the first two years of attendance at the University whether they intend to graduate or not.* Transfer students who do not have the required two years of military training will be required to complete the course or take it until graduation, whichever occurs first.

During their junior and senior years, selected students may carry Advanced Air Science courses which lead to a regular or reserve commission in the United States Air Force.

Students enrolled in the College of Engineering may substitute six credits in Advanced Air Science (A.S. 101, 102, 103, 104) for History of American Civilization (H. 5, 6).

## LIBRARIES

The libraries of the University are located on both the College Park and Baltimore campuses. They include the Theodore R. McKeldin Library and the many college and departmental libraries which house special collections. Because of the location of the University the large libraries of Baltimore and Washington are a valuable asset to graduate work. Arrangements can be made for personal work in the Enoch Pratt Library of Baltimore, the Library of Congress, the United States Department of Agriculture Library and the many fine collections of other government agencies in Washington.

Located in a geographical area rich in library resources, the University's libraries are well equipped to serve the engineering programs of study and research. The Engineering and Physical Sciences Library which supplements the Science and Technology Division of the general University Library is in the north wing of the Mathematics Building. This Library has a reading room on the first floor and three decks of book stacks above with a capacity of over 100,000 volumes. Stacks are open to all students. Individual study desks and lockers are assigned by the semester. Six small conference rooms, equipped with chalkboards, are available for group study. Carrels are reserved for graduate

## General Information

students. Micro-film and micro-card readers are maintained for use along with a complete photocopying service.

The Library has collections in engineering, mathematics, physics, and industrial education, and more than 1200 subscriptions to scientific and technical journals. Several personal libraries of outstanding scientists and engineers have been acquired by the Library, the most extensive being the private collections of Max Born and Richard Von Mises. The Library is a designated depository of U.S. Atomic Energy Commission unclassified reports, including those of atomic energy establishments of Great Britain, Canada and other nations. Inter-library loan agreements assure the receipt of needed special materials from other libraries throughout the country.

### GENERAL FACILITIES

The College of Engineering, and departments in other colleges of the University, are well equipped for instruction and basic research in their respective areas of activity. There is excellent interdepartmental cooperation in furthering studies of mutual interest.

### SCHOLARSHIPS AND GRANTS-IN-AID

Scholarships and grants-in-aid are awarded each year to selected students in the College of Engineering. A list of such awards is published in the University publication *An Adventure in Learning*. Applications should be filed on forms which may be obtained from the Director, Office of Scholarships and Grants-in-Aid, University of Maryland, College Park, Maryland.

### HONORS AND AWARDS

The College of Engineering schedules annually in the Spring an *Honors Day Convocation* to direct public attention to students and faculty who have distinguished themselves by scholarship and worthy activities. Families and friends of honorees, sponsors of scholarships and awards, alumni, and others interested in the University are cordially invited to this convocation.

### PROFESSIONAL AND HONOR SOCIETIES

Student branches of the following national engineering societies are established in the College of Engineering: American Institute of Chemical Engineers, American Society of Civil Engineers, American Institute of Electrical Engineers, American Society of Mechanical Engineers, Institute of Aeronautical Sciences, and Institute of Radio Engineers.

Each student is urged to be active in his engineering society. At meetings of professional societies he will meet distinguished engineers representing science, industry, practice, and public service. In discussions of scientific and engineering

subjects he can learn to think for himself and to speak effectively. In teams and committees he can learn to work effectively with others. Indeed, it pays a student to be active in his student branch as it pays a graduate engineer to be active in his national engineering society.

Engineering students are encouraged to attend meetings of local sections of their professional and scientific societies in nearby Baltimore and Washington, to get acquainted with other men in their fields, and to visit nearby industries, public works, libraries and laboratories.

The following national honorary societies of particular interest to students in engineering and related sciences have active chapters at the University of Maryland: Tau Beta Pi, general engineering; Sigma Xi, scientific research; Phi Kappa Phi, senior scholarship; Eta Kappa Nu, electrical engineering; Pi Tau Sigma, mechanical engineering.

### GRADUATE STUDY

An applicant for admission to the Graduate School must hold a bachelor's or a master's degree from a college or university of recognized standing. The applicant shall furnish an official transcript of his collegiate record which for unconditional admission must show creditable completion of an adequate amount of undergraduate preparation of high quality for graduate work in his chosen field.

Application for admission to the Graduate School should be made not later than September 1 for the fall term and January 1 for the spring term on blanks obtained from the office of the Dean of the Graduate School, University of Maryland, College Park, Maryland. Information on graduate work is published in the Graduate School Announcements.

Graduate Assistantships and Research Assistantships with stipends for service, and Fellowships, are sometimes available for study and research in the several departments of the College of Engineering. Only full-time students who have been admitted to the Graduate School are eligible for appointment. Preference is given to graduate students who are American citizens in view of limitations of available funds. Foreign students may be considered for vacancies after they have completed at least one year of full-time graduate study in residence at the University of Maryland. Letters of application for assistantships or fellowships should be directed to the head of the student's major department in the College of Engineering.

### FOR ADDITIONAL INFORMATION

Detailed information concerning fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of

## *General Information*

the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September of each year to all undergraduate students, and again in February to all new undergraduate students not previously enrolled in the preceding fall semester.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

### COLLEGES LOCATED AT COLLEGE PARK:

Dean

(College in which you are interested)

The University of Maryland

College Park, Maryland

### PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean

(School in which you are interested)

The University of Maryland

Lombard and Greene Streets

Baltimore 1, Maryland



## CURRICULA AND PROGRAMS

COURSES IN THE NORMAL CURRICULUM OR PROGRAM AND PRESCRIBED CREDIT hours leading to the degree Bachelor of Science are outlined on the following pages for each department in the College of Engineering. ". . . No student may modify the prescribed number of hours without special permission from the dean of his college." The courses in each curriculum may be classified in the following categories:

1. Certain courses required of all undergraduate students in the University. Students who are not specifically exempted must schedule the following courses: Basic Air Science (8 credits) for men; physical activities (4 credits) for men and women; and Personal and Community Health (4 credits) for women.

2. Courses in the American Civilization Program. These include English (12 credits); American history (6 credits); American government (3 credits); and approved electives (3 credits). See also *University General and Academic Regulations*.

3. Courses in the physical sciences—mathematics, chemistry, physics . . .

4. Collateral engineering courses—drawing, engineering sciences, and other courses approved for one curriculum but offered by another department.

5. Courses in the major department.

A student should obtain written approval for any substitutions of courses from the department head and the dean of his college.

### BASIC CURRICULUM FOR FRESHMEN

Freshmen in the College of Engineering regularly schedule the following courses:

Freshman Year	Semester	
	I	II
Eng. 1, 2—Composition and American Literature <sup>1</sup> .....	3	3
Sp. 7—Public Speaking.....	..	2
Math. 18, 19—Elementary Mathematical Analysis <sup>1</sup> .....	5	5
Chem. 1, 3—General Chemistry.....	4	4
Dr. 1, 2—Engineering Drawing <sup>1</sup> .....	2	2
A. S. 1, 2—Basic Air Science (men) .....	2	2
Hea. 2, 4—Personal and Community Health (women).....	2	2
Physical Activities .....	1	1
Total .....	17	19

<sup>1</sup>Enrollment in English, history, mathematics and drawing depends on the outcome of the classification tests. Students who have *exemptions* in English, schedule Eng. 21; in history, schedule H. 56; in American government, schedule approved elective. Students who pass the highest level classification test in mathematics schedule Math. 18 and Dr. 1; others schedule Math. 1 *only, without credit*.

## AERONAUTICAL ENGINEERING

Aeronautical engineering involves the application of the laws of physics and mathematics to the problems of flight through the earth's atmosphere and outer space. The main sub-divisions of the field are aerodynamics, structures, and propulsion, although many problems, such as those of aeroelasticity and flutter, cut across dividing lines. The aerodynamicist must start out with an understanding of the laws of fluid flow at low speed, then modify these principles for the effects of higher speeds. At supersonic speeds, he must account for shock waves in flight at moderate altitudes and further changes in the flow at extremely high altitudes. At extremely high speeds he must add to this an understanding of the effects of ionization and molecular dissociation. The structures engineer is mainly concerned with the ability of the vehicle to withstand the forces and accelerations in flight. For high performance aircraft and missiles, he must consider the aerodynamic heating resulting from high-speed flight and allow for the weakening effect on materials. The propulsion engineer must deal with rocket, jet, or propeller systems which serve to accelerate the vehicle and to offset drag forces during flight.

The aeronautical engineer is continually beset with the problems of maintaining adequate margins of safety with a minimum of weight. The saving of even one pound of weight in fuel or structure of a missile is of such value as to justify the expenditure of many engineering man-hours. These high dividends for thoroughness and precision in technical understanding are a source of gratification to the aeronautical engineer.

### AERONAUTICAL ENGINEERING CURRICULUM

<i>Sophomore Year</i>	<i>Semester</i>	
	<i>I</i>	<i>II</i>
G. & P. 1—American Government.....	3	..
American Civilization—Elective Group I.....	..	3
Math. 20, 21—Calculus .....	4	4
Phys. 20, 21—General Physics .....	5	5
M.E. 20, 21—Manufacturing Tools and Processes .....	1	1
M.E. 22, 23—Statics and Mechanics of Materials .....	3	3
A.S. 3, 4—Basic Air Science (men).....	2	2
Physical Activities .....	1	1
Total .....	19	19

# Aeronautical Engineering Curriculum

	Semester	
	I	II
<i>Junior Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature .....	3	3
H. 5, 6—History of American Civilization.....	3	3
Aero. E. 50—Introduction to Aeronautics .....	1	..
M.E. 24—Dynamics .....	3	..
M.E. 100—Thermodynamics .....	3	..
Math. 64—Differential Equations for Engineers .....	3	..
M.E. 101—Heat Transfer .....	..	3
Aero. E. 101—Aerodynamics I .....	..	3
M.E. 103—Metallography .....	..	3
E.E. 51, 52—Principles of Electrical Engineering .....	4	4
Total .....	20	19
<i>Senior Year</i>		
Elective .....	..	3
Aero. E. 117—Aircraft Vibrations .....	3	..
Aero. E. 102—Aerodynamics II .....	2	..
Aero. E. 107, 108—Airplane Design .....	4	4
Aero. E. 109, 110—Airplane Power Plants .....	3	3
Aero. E. 111, 112—Aeronautical Laboratory .....	2	2
Aero. E. 113, 114—Mechanics of Aircraft Structures .....	4	3
Aero. E. 115—Aerodynamics III .....	..	3
Total .....	18	18

## CHEMICAL ENGINEERING

Chemical engineering deals primarily with the industrial and economic transformation of matter. It seeks to assemble and develop information on chemical operations and processes of importance in modern life and to apply this under executive direction, according to engineering methods, for the attainment of economic objectives. Modern chemical research has contributed so much to industrial and social welfare that chemical engineering may now be said to cover practically every operation in which an industrial material undergoes a change in its chemical identity. It is broadly responsible for the process industries. Chemical engineering arose from industrial chemistry and chemical technology, and these are recognized as sub-divisions of the field.

As a science, metallurgy involves an understanding of the fundamentals involved in the development of alloys or combinations of metals, processing or treatment to enhance the properties of metals, techniques of fabrication, protection against corrosion.

The chemical metallurgist is concerned with the extraction of metals from their ores, refining them, and making alloys with desirable properties. He is further interested in the chemistry involved in processing metals as in carburization, decarburization, and desulfurization of solid steels. The physical metallurgist is primarily interested in the crystal structure of metals together with their physical or mechanical properties.

Nuclear engineering involves the industrial application of the effects of nuclear or high energy radiation on matter. It involves supporting operations which must be closely integrated with the irradiation activities, such as preparing special materials (like thorium and uranium) by chemical and isotopic separation, and processing irradiated nuclear fuels. It is a program of graduate study at the University of Maryland. Related courses are given in other departments, especially the Departments of Mechanical Engineering, Physics, and Chemistry.

### CHEMICAL ENGINEERING CURRICULUM

<i>Sophomore Year</i>	—Semester—	
	I	II
Math. 20, 21—Calculus .....	4	4
Phys. 20, 21—General Physics .....	5	5
Chem. 35, 37—Elementary Organic Chemistry Lectures .....	2	2
Chem. 36—Elementary Organic Laboratory .....	2	..
Chem. 19—Quantitative Chemical Analysis .....	4	..
Ch. E. 15—Stoichiometry and Chemical Engineering Control ..	..	4
A.S. 3, 4—Basic Air Science (men).....	2	2
Physical Activities .....	1	1
Total .....	20	18

# Chemical Engineering Curriculum

	Semester	
	I	II
<i>Junior Year</i>		
Econ. 37—Fundamentals of Economics .....	3	..
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature .....	3	3
Ch. E. 103, f, s—Elements of Chemical Engineering .....	3	3
Chem. 187, 189—Physical Chemistry .....	3	3
Chem. 188, 190—Physical Chemistry Laboratory .....	2	2
C.E. 20—Statics and Dynamics .....	3	..
C.E. 22—Strength of Materials .....	..	3
Ch. E. 116—Applied Math. in Chemical Engineering 1....	..	3
Ch. E. 140—Introduction to Nuclear Technology .....	2	..
G. & P. 1—American Government.....	..	3
Total .....	19	20
<i>Senior Year</i>		
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
Ch. E. 105, f, s—Advanced Unit Operations .....	5	5
Ch. E. 109, f, s—Chemical Engineering Thermodynamics ...	3	3
Ch. E. 112, 113—Industrial Chemical Technology .....	3	3
E. E. 51, 52—Principles of Electrical Engineering .....	4	4
Ch. E. 104—Seminar .....	1	1
Ch. E. 123—Elements of Plant Design .....	3	..
Ch. E. 131—Chemical Engineering Economics .....	..	2
Total .....	22	21

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<sup>1</sup>Students who are to become candidates for graduate degrees requiring foreign language may elect instead a foreign language and secure the American history credit in their graduate program.



## CIVIL ENGINEERING

Civil engineering is the professional hub of the construction and transportation industries which together are perhaps the largest and most diversified industries in America.

Professional civil engineers plan, design, and supervise construction of virtually every large enterprise involving construction, transportation, industrial facilities, and public works. Having planned and supervised construction of a major project, civil engineers are often selected to direct its operation as managers or executives.

Civil engineers design structures such as bridges, buildings, dams, power plants, tunnels . . . They plan and direct the use of water for cities, industries, flood control, irrigation, power . . . They plan water treatment plants, sewerage systems, and waste disposal facilities and supervise their operation . . . They manage municipal and regional development projects, public works, and private enterprise of great variety.

The civil engineer may work primarily in the office; primarily in the field; or he may divide his duty between field and office. To accomplish his ends as a creative planner and designer, he must be proficient in adapting mathematics, the physical sciences, and materials of construction. He must have a working knowledge of men and of machines. He must be an alert observer with an eye for significance. He must be fair and resourceful in handling men, competent in devising adequate and economical solutions to a *whole* problem, responsible in handling funds, and practical in getting a job done adequately and on time. Adequacy, safety, economy, resourcefulness, integrity, and a sense of fitness are important considerations in everything a civil engineer does.

The foundations of professional engineering service are laid in college where in tackling a *project* the student learns to use mathematics and physical sciences; learns to communicate effectively in the *engineer's languages* of words, pictures, and numbers; learns to think and speak for himself; and learns to work in teams with others.

### CIVIL ENGINEERING CURRICULUM

<i>Sophomore Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature .....	3	3
Math. 20, 21—Calculus .....	4	4
Phys. 20, 21—General Physics .....	5	5
C.E. 21—Statics .....	3	..
C.E. 23—Strength of Materials .....	..	3
A.S. 3, 4—Basic Air Science (men).....	2	2
Physical Activities .....	1	1
	<hr/>	<hr/>
Total .....	18	18

	Semester	
	I	II
<i>Junior Year</i>		
Econ. 37—Fundamentals of Economics .....	3	..
G. & P. 1—American Government .....	..	3
C.E. 24—Dynamics .....	..	3
C.E. 30—Materials of Engineering .....	2	..
C.E. 110, 111—Surveying I, II .....	3	3
C.E. 140—Fluid Mechanics .....	3	..
C.E. 160—Structural Analysis I .....	..	3
C.E. 180—Transportation .....	..	3
E.E. 50—Fundamentals of Electrical Engineering .....	3	..
C.E. 100—Seminar .....	..	2
Math. 64—Differential Equations for Engineers .....	3	..
Total .....	17	17
<i>Senior Year</i>		
H. 5, 6—History of American Civilization.....	3	3
C.E. 101—Construction Planning .....	..	3
C.E. 150—Soil Mechanics .....	3	..
C.E. 161—Structural Analysis II .....	3	..
C.E. 162—Structural Design (Steel) .....	3	..
C.E. 163—Structural Design (Concrete) .....	..	3
M.E. 105—Principles of Mechanical Engineering .....	..	3
C.E. 170—Water Supply .....	3	..
C.E. 171—Sewerage .....	..	3
Approved Technical Elective <sup>1</sup> .....	3	3
Total .....	18	18

<sup>1</sup>To provide depth in selected fields, students shall elect, with the advice and approval of the department, from such groups of technical courses as will be offered in the fields of highway engineering, hydraulic engineering and hydrology, sanitary engineering, soils and foundations and structural engineering with a senior project in the field selected.

## ELECTRICAL ENGINEERING

The technical portion of an electrical engineering education is devoted largely to the study of electricity and magnetism. A wide variety of physical quantities is encountered. One physical quantity which is common to all branches of science and which is of particular interest to the electrical engineer is energy. Energy appears in various forms throughout the physical universe.

Electricity (or electric charge) is, in a broad sense, a physical agent used to transform or convert energy from one form to another. The separation of electric charge into its positive and negative constituents results in potential energy of a form that can be readily converted into other forms of energy. This property of electric charge is responsible for the widespread use of electricity, particularly where energy conversions are involved or where energy (including the energy content of intelligence) is to be transmitted from one place to another. It is toward understanding these energy conversions that the undergraduate curriculum is directed. Both theoretical and laboratory courses are required.

Electrical science is an exacting discipline which places very little value on *limited* mastery of subject matter. In his quest of thorough understanding, the student develops a questioning and critical attitude toward experimentally-determined relationships as well as toward the mathematical reasoning which accompanies the engineering exploitation of basic physical principles.

Electrical engineering deals with the generation, transmission, distribution, and utilization of electrical energy; and with the transmission and reception of intelligence as, for example, telephone, radio, radar, and television systems. The guidance of missiles to outer space and the telemetering of physical data from outer space are special types of communication systems which are presently gaining prominence. Automatic regulation (or servomechanisms), data processing, and instrumentation are relatively new branches of electrical engineering. Recent developments in the field of solid state physics have introduced still another branch, namely, transistor electronics.

The principal objectives of the Department are: (a) To impart to both graduate and undergraduate students a mature understanding of the basic scientific principles of electrical engineering; (b) to develop an awareness and appreciation of both experimental and analytical methods of solving engineering problems.

The Department of Electrical Engineering is qualified by reason of faculty interest and equipment to pursue basic research in the fields of automatic regulation, radio-wave propagation, active-network synthesis, and microwave engineering. Microwave engineering at the University of Maryland includes the fundamental principles of maser operation as well as the actual engineering associated with this device.

ELECTRICAL ENGINEERING CURRICULUM

	Semester	
	I	II
<i>Sophomore Year</i>		
G. & P. 1—American Government .....	3	..
American Civilization Elective Group I .....	3	..
Math. 20, 21—Calculus .....	4	4
Phys. 20, 21—General Physics .....	5	5
C.E. 20—Statics and Dynamics .....	..	3
E.E. 1—Basic Electrical Engineering .....	..	4
A.S. 3, 4—Basic Air Science (men) .....	2	2
Physical Activities .....	1	1
Total .....	18	19
<i>Junior Year</i>		
H. 5, 6—History of American Civilization .....	3	3
C.E. 22—Strength of Materials (1st semester preferably) ....	3	..
C.E. 141—Fluid Mechanics (2nd semester preferably) .....	..	3
Math. 64—Differential Equations for Engineers .....	3	..
E.E. 60—Electricity and Magnetism .....	3	..
Ch.E. 140—Introduction to Nuclear Technology .....	..	2
E.E. 65—Direct Current Machinery .....	..	3
E.E. 100—Alternating Current Circuits .....	4	..
E.E. 101—Engineering Electronics .....	..	4
E.E. 103—Engineering Analysis .....	2	..
E.E. 104—Communications .....	..	3
Total .....	18	18
<i>Senior Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature .....	3	3
M.E. 100—Thermodynamics .....	3	..
M.E. 107—Heat Power—Chemical and Nuclear .....	..	4
E.E. 102—Alternating Current Machinery .....	4	..
E.E. 105—Radio Engineering .....	4	..
E.E. 106—Radio Engineering, or		
E.E. 107—Electrical Measurements .....	..	4
E.E. 108—Electric Transients .....	3	..
E.E. 109—Pulse Techniques .....	..	3
Technical Elective <sup>1</sup> .....	..	3
Total .....	17	17

<sup>1</sup>To be selected from the following group:

- E.E. 110—Transistor Circuitry (3)
- E.E. 115—Feedback Control Systems (3)
- E.E. 120—Electromagnetic Waves (3)

## MECHANICAL ENGINEERING

The principal function of the mechanical engineer is to apply science and technology creatively to the design and manufacture of machines for the practical use of mankind. Any machine or manufactured product requires, basically, (1) the art and science of generating, transmitting, and utilizing mechanical power, and (2) research, development, designing, and the coordination of materials, personnel, and management. These basic requirements define mechanical engineering. The following *professional divisions* of the American Society of Mechanical Engineers give a good idea of types of work in which the mechanical engineer may become associated: applied mechanics, aviation, materials handling, management, oil and gas power, fuels, safety, hydraulics, metals engineering, heat transfer, process industries, production, machine design, lubrication, petroleum, nuclear engineering, railroads, power, textile, gas turbine power, wood industries, rubber and plastics, and instruments and regulators.

Because of the wide variety of engineering opportunities available to the mechanical engineer, the curriculum is designed to give the student a thorough training in the basic sciences: physics, chemistry, mathematics, solid and fluid mechanics, dynamics, thermodynamics, heat transfer, metallography, electricity, nuclear technology, power, and design.

There are opportunities for mechanical engineers in all manufacturing enterprises. There are opportunities in research, design, production, testing, maintenance, and sales. There are opportunities for engineers who can devise manufactured products that utilize power in any form for the convenience of man. There are opportunities wherever there are factories. Since every town of moderate size has factories, the mechanical engineer may select the community where he wishes to make his home and be reasonably certain that he can find satisfactory employment there.

### MECHANICAL ENGINEERING CURRICULUM

<i>Sophomore Year</i>	—Semester—	
	I	II
G. & P. 1—American Government .....	3	..
American Civilization Elective Group I .....	..	3
Math. 20, 21—Calculus .....	4	4
Phys. 20, 21—General Physics .....	5	5
M.E. 20, 21—Manufacturing Tools and Processes .....	1	1
M.E. 22, 23—Statics and Mechanics of Materials .....	3	3
A. S. 3, 4—Basic Air Science (men) .....	2	2
Physical Activities .....	1	1
Total .....	19	19



# Mechanical Engineering Curriculum

	Semester	
	I	II
<i>Junior Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature .....	3	3
Math. 64—Differential Equations for Engineers .....	3	..
E.E. 51, 52—Principles of Electrical Engineering .....	4	4
M.E. 24—Dynamics .....	3	..
Ch.E. 140—Introduction to Nuclear Technology.....	2	..
M.E. 100—Thermodynamics .....	3	..
M.E. 101—Heat Transfer .....	..	3
M.E. 102—Fluid Mechanics .....	..	3
M.E. 103—Metallography .....	..	3
M.E. 104—Kinematics .....	..	2
Total .....	18	18
<i>Senior Year</i>		
H. 5, 6—History of American Civilization.....	3	3
M.E. 150, 151—Heat Power—Chemical and Nuclear .....	4	4
M.E. 152, 153—Mechanical Engineering Design .....	4	3
M.E. 154, 155—Mechanical Laboratory .....	2	2
Technical Electives <sup>1</sup> .....	6	6
Total .....	19	18

<sup>1</sup>To be selected from the following group:

- M.E. 156—Heating and Air Conditioning (3)
- M.E. 157—Refrigeration (3)
- M.E. 158, 159—Applied Elasticity (3, 3)
- M.E. 160, 161—Advanced Dynamics (3, 3)
- M.E. 162, 163—Advanced Thermodynamics (3, 3)
- M.E. 164—Research (3)
- M.E. 165—Creative Engineering (3)
- M.E. 166, 167—Advanced Fluid Mechanics (3, 3)

## FIRE PROTECTION

Fire protection is concerned with the scientific and technical problems of preventing loss of life and property from fire, explosion and related hazards, and of evaluating and eliminating hazardous conditions.

The fundamental principles of fire protection are relatively well defined and the application of these principles to a modern industrialized society has become a specialized activity. Control of the hazards in manufacturing processes calls for an understanding not only of measures for fire protection but of the processes themselves. Often the most effective solution to the problem of safeguarding a hazardous operation lies in the modification of the process rather than in the installation of special extinguishing equipment. The expert in fire protection must be prepared to decide in any given case what is the best and most economical solution of the fire prevention problem. His recommendations are often based not only on sound principles of fire protection but on a thorough understanding of the special problems of the individual property.

Modern fire protection utilizes a wide variety of mechanical and electrical equipment which the student must understand in principle before he can apply them to special problems. The fire protection curriculum emphasizes the scientific, technical and humanitarian aspects of fire protection, and the development of the individual student.

The problems and challenges which confront the specialist in fire protection include the reduction and control of fire hazards due to processes subject to fire or explosion in respect to design, installation and handling, involving both physical and human factors; the use of buildings and transportation facilities to restrict the spread of fire and to facilitate the escape of occupants in case of fire; the design, installation and maintenance of fire detection and extinguishing devices and systems; and the organization and education of persons for fire prevention and fire protection.

### FIRE PROTECTION CURRICULUM

<i>Sophomore Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
G. & P. 1—American Government .....	3	..
Soc. 1—Sociology of American Life, or Phil. 1—Philosophy of Modern Man or Psych. 1—Introduction to Psychology } .....	..	3
Math. 20, 21—Calculus .....	4	4
Phys. 20, 21—General Physics.....	5	5
Approved Technical Elective.....	2-3	2-3
A.S. 3, 4—Basic Air Science (men).....	2	2
Physical Activities .....	1	1
Total .....	17-18	17-18

<i>Junior Year</i>	<i>Semester</i>	
	I	II
Eng. 3, 4—Composition and World Literature or		
Eng. 5, 6—Composition and English Literature.....	3	3
C. E. 20—Statics and Dynamics.....	3	..
C. E. 22—Strength of Materials .....	..	3
Econ. 37—Fundamentals of Economics .....	3	..
C. E. 141—Fluid Mechanics .....	..	3
Ind. Ed. 143, 144—Industrial Safety Education.....	2	2
F. P. 104—Essentials of Fire Protection.....	3	..
F. P. 105—Fire Protection Organization.....	..	3
Approved Electives .....	3	3
	<hr/>	<hr/>
Total .....	17	17
 <i>Senior Year</i>		
H. 5, 6—History of American Civilization.....	3	3
C. E. 30—Materials of Engineering.....	2	..
B. A. 191—Property Insurance.....	..	3
F. P. 117—Technical Projects .....	4	..
F. P. 111—Special Hazards and Problems.....	..	4
F. P. 112—Tactics and Operations.....	3	..
F. P. 110—Installations and Equipment.....	..	4
F. P. 120—Insurance Rating and Schedules.....	3	..
C. E. 101—Construction Planning.....	..	3
	<hr/>	<hr/>
Total .....	15	17

## AGRICULTURE - ENGINEERING

A five-year combined program in agriculture and engineering, arranged jointly by the College of Agriculture and the College of Engineering, permits students to become candidates for the degree of Bachelor of Science in the College of Agriculture at the end of four years and for the degree of Bachelor of Science in the Department of Civil, Electrical, Mechanical, or Chemical Engineering at the end of the fifth year.

This program is described in the catalog of the College of Agriculture.

## INTERIM METALLURGY PROGRAM

The program listed below was formerly the metallurgical option of the Department of Chemical Engineering. This option was discontinued effective February 1, 1960. However, students who were enrolled in it may continue in the interim program leading to the degree, Bachelor of Science (without curriculum designation), as in recent years.

This interim metallurgy program differs from the chemical engineering curriculum chiefly in the junior and senior years when a total of 35 semester-hours

## Interim Metallurgy Program

of courses in chemical engineering are replaced by 30 semester-hours of courses in metallurgy subjects.

While both the interim metallurgy program and the courses designated *Met.* continue to be assigned to the Department of Chemical Engineering, neither an "option" nor a new "curriculum" is implied.

### INTERIM METALLURGY PROGRAM

	Semester	
	I	II
<i>Sophomore Year</i>		
G. & P. 1—American Government .....	3	..
Math. 20, 21—Calculus .....	4	4
Phys. 20, 21—General Physics .....	5	5
Chem. 19—Elements of Quantitative Analysis .....	4	..
Ch. E. 15—Stoichiometry and Chemical Engineering Control..	..	4
Met. 23—Non-ferrous and Ferrous Metallurgy.....	..	4
A.S. 3, 4—Basic Air Science (men).....	2	2
Physical Activities .....	1	1
Total .....	19	20
<i>Junior Year</i>		
Eng. 3, 4—Composition and World Literature; or		
Eng. 5, 6—Composition and English Literature.....	3	3
C.E. 20—Statics and Dynamics .....	3	..
C.E. 22—Strength of Materials .....	..	3
Ch. E. 103, f, s—Elements of Chemical Engineering.....	3	3
Met. 150, 151—Physical Metallurgy .....	3	3
Met. 152, 153—Physical Metallurgy Laboratory .....	2	2
Chem. 187, 189—Physical Chemistry .....	3	3
Chem. 188, 190—Physical Chemistry Laboratory .....	2	2
Total .....	19	19
<i>Senior Year</i>		
Met. 182, 183—Optical & X-Ray Metallography .....	4	4
Met. 164, 166—Thermodynamics of Metallurgical Processes..	3	3
Ch. E. 116—Applied Math. in Chemical Engineering I.... ..	..	3
Met. 104—Senior Metallurgical Seminar .....	1	1
Met. 168, 170—Metallurgical Investigations .....	2	4
Econ. 37—Fundamentals of Economics .....	3	..
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
Ch. E. 140—Introduction to Nuclear Technology.....	2	..
Total .....	18	18

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<sup>1</sup>Students who are to become candidates for graduate degrees requiring foreign language may elect instead a foreign language and secure the American history credit in their graduate program.

## COGNATE ACTIVITIES

DEPARTMENTS IN THE COLLEGE OF ENGINEERING WHICH CONTRIBUTE significantly to activities in education, research, and professional service—although they have no academic curricula—include the Institute for Fluid Dynamics and Applied Mathematics; the Department of Wind Tunnel Operations; and the Fire Service Extension Department. These departments work closely with academic departments of the University in areas of common interest. The scope of work in each department area is outlined briefly in paragraphs which follow.

Fellowship grants and contracts for fundamental research, also contribute to the overall professional-scientific activity of the staff of the College.

### Institute For Fluid Dynamics and Applied Mathematics

The Institute for Fluid Dynamics and Applied Mathematics does fundamental research in theoretical and experimental fluid dynamics and in the applications of mathematics.

Theoretical and experimental studies of gases at high temperatures and high-speed flow in fields of various nature and around bodies are being carried out with the aid of shock tubes of special design with particular attention being given to the new field of magneto gas dynamics. A low-turbulence wind tunnel is available for studies of turbulence. Other facilities make possible the investigation of vortex flow and of transition from laminar to turbulent motion. Work in mathematics ranges from classical hydro-dynamics to the modern theory of transonic flow, and includes problems in eigenvalues, elasticity, electrostatics and partial differential equations. A research program is under way in statistical mechanics, with emphasis on the theory of irreversible processes and the theory of solids. The research program of the Institute is partially supported by outside contracts.

The Institute cooperates in theoretical and experimental research with other scientific agencies and, in so far as its resources permit, offers its facilities to scholars in other institutions who may wish to spend their leave periods in study and research.

The faculty and staff of the Institute work closely with faculty and staff of other departments on problems of mutual interest. They join in weekly seminars and colloquia on research problems in applied mathematics and applied mechanics.

The faculty of the Institute, in cooperation with the faculty of other departments of the University, offer courses for students working toward advanced degrees. These courses form part of the regular departmental offerings and further information about them may be obtained from the Graduate School Announcements.



### Wind Tunnel Operations

The Wind Tunnel Operations Department conducts a program of experimental research and development in cooperation with the aircraft industry, agencies of government, and other industries with problems concerning aerodynamics. Testing programs cover a variety of subjects including all types of aircraft, missiles, ordnance, parachutes, radar antennas, trucks, automobiles, structures, and exterior equipment subject to high winds.

The Department has a 7.75 x 11 foot wind tunnel that can be operated at speeds from 0 to 240 mph. This facility has powered model drive equipment, and auxiliary vacuum and high pressure air supplies for boundary layer control studies. Supporting shops include complete woodworking, machine shop, photographic, and instrumentation facilities. A 3 x 10-inch shock tube is also available for tests and special studies involving very high velocities.

The full time staff of the Department includes engineering, computing, shop, and technical operations personnel. This staff cooperates with other faculty and students in the College of Engineering on special problems of mutual interest.

### Fire Service Extension Department

The Fire Service Extension Department provides in-service training for firemen and serves in an advisory capacity in matters of fire prevention, fire protection, and fire safety regulations. Classes are conducted in Maryland by local instructors who work under the guidance of Senior Instructors of the Department. Basic training of 60 clock hours is given in the fundamentals of firemanship. An advanced course of 60 clock hours covers the technical field of fire prevention, control and extinguishment. A third section of 60 clock hours emphasizes related technical information. A training course of 42 clock hours for rescue operations is also available. An increasingly important program is that of establishing and improving fire prevention and fire protection in Maryland industry, institutions and mercantile establishments.

A four-day short course is held annually in September at the University. Specialized courses include instructor training, pump school series, hydraulics, aerial ladders. There are also conferences for fire company presidents, conferences for fire chiefs, and schools for fire officers.

Additional information may be obtained from the Director, Fire Service Extension Department, University of Maryland, College Park, Maryland.

### Other Research Laboratories

The National Sand and Gravel Association, the National Ready Mixed Concrete Association, and the Asphalt Institute have research laboratories on the campus. These agencies also sponsor fellowships for graduate students who will devote half-time to graduate study and half-time to research on approved

projects in their respective areas of interest. Fellows will be selected from applicants who have been admitted to graduate study in some field of engineering. Applications for admission to graduate study should be made on forms that may be obtained from the Dean of the Graduate School, University of Maryland, College Park, Maryland.

## Engineering Experiment Station

The Engineering Experiment Station carries on cooperative investigations with industries of Maryland and departments of the state and federal governments. A diversity of engineering training, experience, and equipment represented by the faculty and laboratories of the College of Engineering is thus made available for the problems under inquiry.

The staff of the College of Engineering available for research studies will be glad to discuss proposed problems of importance to industry and of public interest where means can be found for the cooperative researchers; such studies may be undertaken with the approval of the administration of the University.

## COURSE OFFERINGS

The University reserves the right to change any provisions or requirements at any time within the student's term of residence; or to withdraw or discontinue any course; or to ask a student to withdraw when it considers such action to be in the best interests of the University. If a scheduled course is withdrawn or discontinued, the fee charged for such course will be returned, and the corresponding fee for change in registration will not be charged.

Courses designated by numbers 1 to 99 are for undergraduates; above 200 for graduate students; and from 100 to 199 for advanced undergraduates and (subject to official approval) for graduates also.

A separate schedule of courses is issued each semester showing the hours, places of meeting, and other information required by the student in making out his program. These schedules for a particular semester are available during its period of registration.

The responsibility for proper registration and for satisfying stated prerequisites for any course must rest with the student—as does the responsibility for proper achievement in courses in which he is enrolled. Each student should be familiar with the provisions of this catalog, *University General and Academic Regulations*, and other pertinent regulations.

The courses in each engineering curriculum, as classified on page 7, form a pattern of "sequences" and "parallels" in subject matter. In this respect, curricula in engineering may differ from curricula in other colleges. Some regulations which are generally applicable to all students (see *University General and Academic Regulations*) may need clarification for purposes of orderly administration among engineering students. The following administrative interpretations are noted for the current year:

1. A student who is enrolled for more than 6 semester-hours of work must register for physical education and/or Basic Air Science (Health for women students) each semester until he has fully satisfied the University's requirements in both subjects. These subjects may not be deferred, and two courses in one area may not be scheduled the same semester.

2. A student has attained junior standing *on time* if, among the first 63 applicable academic semester-hours he has scheduled, he has completed with an *average* of "C" = 2.0 or better not less than 56 academic semester-hours which are listed in his curriculum for the freshman and sophomore years. Otherwise Academic Regulations, Section B, apply clearly.

3. A student who has not attained junior standing *on time* (as noted above) will be reported to the Registrar in accord with Academic Regulations, Section B.

4. To be eligible for a bachelor's degree in the College of Engineering, a student must have an *average* of at least "C" = 2.0—(a) in all subjects applicable

to his degree, and (b) in all junior-senior courses in his major department. Responsibility for knowing and meeting all degree requirements for graduation in any curriculum rests with the student.

A student is advised to schedule a reduced load if his record of scholarship during the previous semester was unsatisfactory (a) because he failed courses, or (b) because his average during the previous semester was less than 2.0 ("C"). A student who is on probation may not schedule more than 16 semester-hours of work in any semester, *including* credit for physical educational and military science.

Courses administered by departments in the College of Engineering are noted on pages 25-52 and selected courses administered by other departments of the University on pages 53-59. The number of credit hours is shown in the arabic numerals in parenthesis after the title of each course.

## AERONAUTICAL ENGINEERING

*Professors:* SHERWOOD, CORNING, SHEN AND WESKE.

*Visiting Professor:* LUDFORD.

*Associate Professor:* RIVELLO.

*Lecturers:* HAMA, PAI, KURZWEG, NICOLAIDES, SEIGEL AND WILSON.

*Aero. E. 50. Introduction to Aeronautics. (1)*

First semester. One laboratory period a week. Prerequisite, Dr. 2. Introductory lectures and supervised problem work. (Corning.)

### *For Advanced Undergraduates and Graduates*

*Aero. E. 101. Aerodynamics I. (3)*

Second semester. Three lectures a week. Prerequisites, Phys. 21 and Math. 21. Basic fluid mechanics and aerodynamic theory. (Sherwood.)

*Aero. E. 102. Aerodynamics II. (2)*

First semester. Two lectures a week. Prerequisite, Aero. E. 101. Elements of hydrodynamics and application to engineering problems. (Sherwood.)

*Aero. E. 107, 108. Airplane Design. (4, 4)*

First and second semesters. Two lectures and two supervised calculation periods per week. Prerequisites, Aero. E. 101, and M.E. 22, 23. Aero. E. 102 and Aero. E. 113 to be taken concurrently. Theory and method of airplane design, airplane stability and control, airloads, and structural design. (Corning.)

*Aero. E. 109, 110. Aircraft Power Plants. (3, 3)*

First and second semesters. Two lectures and one laboratory period a week. Prerequisite, M.E. 100. Study of basic operating principles of reciprocating, turbojet, turboprop, ramjet, and rocket engines. Specific topics of study include thermodynamic processes, combustion, fuels, carburetion, supercharging, lubrication, and engine performance. (Weske.)

**Aero. E. 111, 112. *Aeronautical Laboratory.* (2, 2)**

First and second semesters. One lecture and one laboratory period a week. Prerequisite, Aero. E. 101. To be taken concurrently with Aero. E. 102 and Aero. E. 113. Wind tunnel tests. Structure tests. Ballistics tests. Report writing, original research projects. (Staff.)

**Aero. E. 113, 114. *Mechanics of Aircraft Structures.* (4, 3)**

First and second semesters. First semester, 3 lectures and one calculation period a week. Second semester, 3 lectures a week. Prerequisites, M.E. 22, 23 and Math. 64. Principles and problems of airplane stress analysis and structural design. (Rivello.)

**Aero. E. 115. *Aerodynamics III.* (3)**

Second semester. Prerequisite, Aero. E. 102. Elementary theory of the flow of a compressible gas at subsonic and supersonic speeds. (Sherwood, Shen.)

**Aero. E. 117. *Aircraft Vibrations.* (3)**

First semester. Three lectures a week. Prerequisite, Math. 64. Vibration and other dynamic problems occurring in airplane structures. Specific topics of study include the single degree of freedom system, damping, forced vibrations, critical frequency, multiple degrees of freedom, and vibration isolation and absorption. (Ludford.)

*For Graduates*

**Aero. E. 200, 201. *Advanced Aerodynamics.* (3, 3)**

Prerequisites, Aero. E. 115, Math. 64. Review of thermodynamic and physical properties of gases. One dimensional flow of a perfect compressible fluid. Shock waves. Fundamental equations of aerodynamics of a compressible fluid. Two-dimensional linearized theory of compressible flow. Two-dimensional transonic and hypersonic flows. Exact solutions of two dimensional isotropic flow. Linearized theory of three-dimensional potential flow. Exact solution of axially symmetrical potential flow. Method of characteristics. Nozzle design; flow in jets; rotational flow of compressible fluid. One-dimensional viscous compressible flow. Laminar boundary layer of compressible fluids. (Pai.)

**Aero. E. 202, 203. *Advanced Aircraft Structures.* (3, 3)**

Prerequisites, Math. 64 and Aero. E. 113, 114, or permission of the instructor. Introduction to two dimensional theory of elasticity, energy methods, plate theory, theory of elastic instability. Aerodynamic heating of structures, thermal stresses, creep, creep bending and buckling, visco-elastic theory. (Rivello.)

**Aero. E. 204, 205. *Aircraft Dynamics.* (3, 3)**

Prerequisites, Math. 64 and Aero. E. 114. Dynamics of a rigid body and applications to airplane dynamics. Generalized coordinates and Lagrange's equations. Vibrations of simple systems. Dynamics of elastically connected masses. Influence coefficients. Mode shapes and principal oscillations. Transient stresses in an elastic structure. Wing divergence and aileron reversal. Theory of two dimensional oscillating airfoil. Flutter problems. Corrections for finite span. Compressibility effects. (Shen, Nicolaidides.)

**Aero. E. 206, 207. *Advanced Aircraft Powers Plants.* (3, 3)**

Two lectures and one laboratory period a week. Prerequisites, M. E. 100; Aero. E. 109, 110. Special problems of thermodynamics and dynamics of aircraft power plants; jet and rocket engines. Research in power plant laboratory. (Weske.)



*Aero. E. 208. Advanced Aircraft Design. (3)*

First semester. Prerequisites, Aero. E. 101, 102, 113, 114. Theory and method of airplane design. Special emphasis is placed on the derivations and theoretical background of the formulas and experimental data used. (Corning.)

*Aero. E. 209. Stability and Control. (3)*

Second semester. Prerequisites, Aero. E. 101, 102. Dynamic longitudinal and lateral stability and control, preceded by a brief introduction to static stability. (Corning.)

*Aero. E. 210. Aerodynamic Theory. (3)*

First semester. Prerequisites, Aero. E. 101, Math. 64. Fundamental equations in fluid mechanics. Irrotational motion. Circulation theory of lift. Thin airfoil theory. Lifting line theory. Wind tunnel corrections. Propellor theories. Linearized equations in compressible flow. (Ludford.)

*Aero. E. 211. The Design and Use of Wind Tunnels (Supersonic). (3)*

First and second semesters. The design and use of wind tunnels (supersonic). Review of basic aerodynamics and thermodynamics. Problems in supersonic tunnel design such as pumping, power supply, condensation and driers. Equipment for measuring results, including balances, manometers, optical instruments, such as schlieren, spark illumination and X-ray equipment. Investigation in supersonic wind tunnels are described with special reference to similitude required for conversion to full scale. (Kurzweg.)

*Aero. E. 212, 213. Bodies at Supersonic Speeds. (3, 3)*

Brief review of gas dynamics, drag, lift, stability, and damping on a body in a supersonic stream. Special aerodynamic problems in the design of supersonic missiles. Methods for obtaining accurate test data on the aerodynamic characteristics of supersonic missiles. (Kurzweg.)

*Aero. E. 214. Seminar.*

(Credit in accordance with work outlined by Aeronautical Engineering staff.) First and second semesters.

*Aero. E. 215. Research.*

(Credit in accordance with work outlined by Aeronautical Engineering staff.) First and second semesters.

*Aero. E. 216. Selected Aeroballistics Problems. (3)*

First semester. Physical processes and aerothermodynamic laws connected with the flow around supersonic missiles. Boundary layer problems and the transfer of heat and mass. (Kurzweg.)

*Aero. E. 217. Aerodynamics of Viscous Fluids. (3)*

Second semester. Prerequisites, Aero. E. 101, Math. 64. Fundamental concepts. Navier-Stokes' equations. Simple exact solutions. Laminar boundary layer theory. Pohlhausen method. Turbulent boundary layer; mixing length and similarity theories. Boundary layer in compressible flow. (Shen.)

*Aero. E. 218. Selected Topics in Aerodynamics. (3)*

First or second semester. Prerequisites, Aero. E. 210, 115. Topics of current interest and recent advances in the field of aerodynamics. (Shen.)

## CHEMICAL ENGINEERING

*Professors:* HUFF, BONNEY, SCHROEDER, PENNINGTON AND DUFFEY.

*Associate Professor:* SILVERMAN.

*Assistant Professor:* GOMEZPLATA.

*Instructors:* MC WILLIAMS, GERKEN, HO, AND MADEY.

*Lecturers:* KRUGER, LIGHTBODY, LORING, AND MOORE.

### *Ch. E. 15. Stoichiometry and Chemical Engineering Control. (4)*

Second semester. Two lectures, two 3-hour laboratories a week. Prerequisite, Chem. 19. Laboratory fee, \$8.00 per semester. Introductory laboratory studies of widely used materials, methods and computations encountered in the examination and interpretation of chemical engineering operations. Laboratory data are employed in heat and material balances of chemical processes. (Gomezplata.)

### *For Advanced Undergraduates and Graduates*

### *Ch. E. 103, f. s. Elements of Chemical Engineering. (3, 3)*

First and second semesters. Three hours a week. Prerequisites, Chem. 3, Math. 21, Phys. 21. Theoretical discussion of underlying philosophy and methods in chemical engineering and elementary treatment of important operations involving fluid flow, heat flow, evaporation, humidity and air conditioning, distillation, absorption, extraction, and filtration. Illustrated by problems and consideration of typical processes. (Huff.)

### *Ch. E. 104. Chemical Engineering Seminar. (1, 1)*

One hour a week. Students prepare reports on current problems in chemical engineering and participate in the discussion of such reports. The content of this course is constantly changing so a student may receive a number of credits by re-registration.

### *Ch. E. 105, f. s. Advanced Unit Operations. (5, 5)*

Two lectures and one all-day laboratory a week. Prerequisites, Ch. E. 103 f, s, Chem. 189, 190. Laboratory fee, \$8.00 per semester. Advanced theoretical treatment of basic chemical engineering operations. Study and laboratory operation of small scale semi-commercial type equipment. A comprehensive problem involving theory and laboratory operations is included to illustrate the development of a plant design requiring the utilization of a number of fundamental topics. (Bonney.)

### *Ch. E. 106, f. s. Minor Problems. (6, 6)*

Laboratory fee, \$8.00 per semester.

### *Ch. E. 107. Fuels and Their Utilization. (3)*

Second semester. Three hours a week. Prerequisites, Ch. E. 103, f, s, or permission of Department of Chemical Engineering. A study of the sources of solid, liquid, and gaseous fuels, their economic conversion, distribution, and utilization. Problems. (Huff.)

### *Ch. E. 109, f. s. Chemical Engineering Thermodynamics. (3, 3)*

Three hours a week. Prerequisites, Chem. 187, 189, Ch. E. 103, f, s, or permission of instructor. A study of the application of the principles of engineering and

chemical thermodynamics to some industrial problems encountered in the practice of chemical engineering. (Bonney.)

*Ch. E. 112, 113. Industrial Chemical Technology. (3, 3)*

Three hours a week. Prerequisites, Ch. E. 103, f, s, or simultaneous registration therein, or permission of the Department of Chemical Engineering. A study of the major chemical processes and industries combined with quantitative analysis of process requirements and yields. Plant inspection, trips, reports, and problems. (Schroeder.)

*Ch. E. 114. Applications of Electrochemistry. (4)*

First semester. Three lecture hours and three laboratory hours per week. Prerequisite, consent of instructor. Laboratory fee, \$8.00.

*Ch. E. 116. Applied Mathematics in Chemical Engineering I. (3)*

Three lectures a week. Prerequisites, Math. 20, 21 and Ch. E. 103, f, s. A study of methods for analysis and solution of chemical engineering problems by use of differential equations. Graphical, numerical and statistical methods and approximations by use of infinite series are covered. (Gomezplata.)

*Ch. E. 117. Applied Mathematics in Chemical Engineering II. (3)*

Three lectures a week. Prerequisites, Ch. E. 116 or equivalent. Material covered includes formulation and solution of partial differential equations that arise in chemical engineering problems. Solution of chemical engineering problems by the calculus of finite differences, and numerical solution of partial differential equations are covered.

*Ch. E. 119. Empirical Equations and Nomography. (3)*

Second semester. Three hours a week. Prerequisite, consent of instructor.

*Ch. E. 123, 124. Elements of Plant Design. (3, 3)*

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, Ch. E. 103, f, s; Ch. E. 116; Chem. 189. The solution of typical problems encountered in the design of chemical engineering plants. Only Ch. E. 123 required of seniors. (Schroeder.)

*Ch. E. 131. Chemical Engineering Economics. (2)*

Second semester. Two lectures a week. Prerequisites, simultaneous registration in or completion of Ch. E. 112, 113, 109 f, s, and 123, or permission of instructor. Economic evaluation of chemical processes. Determination of investment and operating costs for chemical engineering plants. Effect of risk and taxation on profits from such plants. (Schroeder.)

*Ch. E. 140. Introduction to Nuclear Technology. (2)*

First and second semesters. Two lectures a week. Prerequisites, Math. 21 and Phys. 21. Required of students in Departments of Chemical Engineering, Electrical Engineering, and Mechanical Engineering. Engineering problems of the different parts of the nuclear energy complex, including basic theory, nuclear reactor design, and isotopic and chemical separations are discussed. The emphasis is on the nuclear fission reactor. This is an orientation course for those only generally interested in applied atomic energy. (Duffey.)

*Ch. E. 142. Environmental Considerations of Nuclear Engineering. (3)*

First semester. Three lectures a week. Prerequisite, permission of instructor. Engi-

neering analysis of protection of the public and the environment from the hazards of nuclear energy operations. Emphasis is on the handling and disposal of gaseous, liquid and solid radioactive wastes. Meteorological, hydrological and geological phases are included. Typical problems encountered from mining of ores through nuclear reactor operations and chemical separations are considered. Legislative and economic factors, site selection, plant design and operation as related to the environment are discussed.

(Staff.)

### *Ch. E. 145. Applications of Differential Equations and Statistics in Chemical Engineering. (3)*

Second semester. One lecture, two laboratory periods per week. Prerequisites, Ch. E. 103, f, s, Ch. E. 116, or permission of the instructor. (Gomezplata.)

### *Ch. E. 148. Nuclear Technology Laboratory. (4)*

Two lectures, two laboratory periods a week. Prerequisites, Chem. 3, Phys. 21, Math. 21, Ch. E. 140, or equivalents, and permission of instructor. Laboratory fee, \$8.00 per semester. Laboratory operations of equipment demonstrating techniques of detecting and making measurements of nuclear or high energy radiation. Radiation safety experiments are included. Both a sub-critical reactor and a critical reactor are used occasionally as a source of radiation. (Silverman.)

## For Graduates

### *Ch. E. 201. Graduate Unit Operations. (5)*

First semester. One-hour conference, three or more laboratory periods a week. Prerequisite, permission of the Department of Chemical Engineering. Laboratory fee, \$8.00. Advanced theoretical treatment of typical unit operations in chemical engineering. Problems. Laboratory operation of small scale semi-commercial units with supplemental reading, conferences and reports. (Bonney.)

### *Ch. E. 202. Gas Analysis. (3)*

One semester. One lecture and two laboratory periods a week. Prerequisite, permission of Department of Chemical Engineering. Laboratory fee, \$8.00. Quantitative determination of common gases, fuel gases, gaseous vapors, and important gaseous impurities. Problems. (Bonney.)

### *Ch. E. 203. Graduate Seminar. (1)*

One hour a week. Required of all graduate students in chemical engineering. The content of this course is constantly changing so a student may receive a number of credits by re-registration. Students prepare reports on current problems in chemical engineering and participate in the discussion of such reports. (Staff.)

### *Ch. E. 207, f, s. Advanced Plant Design Studies. (3, 3)*

Three conference hours a week. Prerequisite, permission of Department of Chemical Engineering. (Huff, Schroeder.)

### *Ch. E. 209, f, s. Plant Design Studies Laboratory. (3, 3)*

Three laboratory periods a week. Prerequisite, permission of Department of Chemical Engineering. Laboratory fee, \$8.00 per semester. (Bonney.)



*Ch. E. 210, f, s. Gaseous Fuels. (2, 2)*

Two hours a week. Prerequisite, permission of Department of Chemical Engineering. An advanced treatment of some of the underlying scientific principles involved in the production, transmission and utilization of gaseous fuels. Problems in design and selection of equipment. (Huff.)

*Ch. E. 214. Corrosion and Metal Protection. (4)*

Second semester. Four lecture hours a week. Prerequisite, Ch. E. 114 or Chem. 189 or Chem. 190 or consent of the instructor. The subjects to be covered include: theories of corrosion of ferrous and non-ferrous metals, passive films, corrosion inhibitors, metal cleaning, stress corrosion, corrosive chemicals, electrolytic protection, restoration of ancient bronzes, organic coatings, metal coloring, parkerizing, hot dip coatings, plated coatings, and selection of engineering materials. (Huff.)

*Ch. E. 216. Unit Processes of Organic Technology. (3)*

Second semester. Three lectures a week. Prerequisite, permission of the Department of Chemical Engineering. This course coordinates the study of fundamental principles of organic synthesis with the requirements of the industrial plant. (Bonney.)

*Ch. E. 217. Unit Processes of Organic Technology Laboratory. (2)*

Second semester. Two or more laboratory periods a week. Prerequisite, permission of the Department. Laboratory fee, \$8.00 per semester. Pilot plant operation of processes such as halogenation, hydration, nitration, oxidation, reduction and sulfonation. (Bonney.)

*Ch. E. 240, 241. Advanced Heat and Mass Transfer (3, 3)*

First and second semesters. Elective of graduate students in chemical engineering and others. Prerequisite, permission of the Department of Chemical Engineering. The technical and scientific elements of the mathematical theory of heat and mass transfer. (Gomezplata.)

*Ch. E. 250. Chemical Engineering Practice. (6)*

Four hours conference and forty hours per week of work in laboratory and plant for eight weeks. Prerequisite, permission of the Department of Chemical Engineering. Not offered 1960-61.

*Ch. E. 270. Plastics Technology. (3)*

First semester. Two lectures and one laboratory a week. Prerequisite, permission of the Department of Chemical Engineering. Laboratory fee, \$8.00 per semester.

*Ch. E. 280, 281. Graduate Chemical Engineering Thermodynamics. (3, 3)*

First and second semesters. Prerequisites, Ch. E. 109, f, s, Ch. E. 116 or permission of instructor. Advanced studies of the applications of the principles of engineering and chemical thermodynamics to some industrial problems encountered in the practice of chemical engineering. (Bonney.)

*Ch. E. 290. Chemical Engineering Process Kinetics. (3)*

First semester. Three lectures a week. Prerequisite, permission of instructor. Methods of application of kinetic data to the design of reactors for industrially important processes are illustrated by solution of typical problems. Treatments for both homogeneous and heterogeneous reactions are given. (Gomezplata.)



*Ch. E. 301. Seminar in Nuclear Engineering. (1)*

First and second semesters, one meeting a week. Survey of nuclear engineering literature, and oral presentation of prepared reports. Since the content of this course is changing, a student may receive a number of credits by re-registration. (Duffey.)

*Ch. E. 302, 303. Nuclear Reactor Engineering. (3, 3)*

First and second semesters. Three lectures a week. Prerequisite, permission of instructor. The engineering problems of the design, construction and operation of typical nuclear reactors, including general design, nuclear reactor theory, materials of construction, heat transfer, and control, etc. Emphasis is toward commercial nuclear reactors. (Duffey.)

*Ch. E. 305. Sub-critical Nuclear Reactor Laboratory. (3)*

One lecture, two laboratory periods a week. Prerequisites, Ch. E. 148, 302, 303 or equivalents and permission of instructor. Laboratory fee, \$8.00 per semester. Experimental work with the sub-critical nuclear reactor. The appropriate radiation detection equipment is used. Experiments, such as infinite multiplication factors, lattice amplification, temperature coefficients, neutron flux distribution in the lattice, and neutron activation are carried out. (Staff.)

*Ch. E. 308, 309. Nuclear Reactor Laboratory. (4, 4)*

Two lectures and two laboratory periods a week. Prerequisites, permission of instructor, Ch. E. 148, 302, 303, 305, or equivalent. Laboratory fee \$10.00 per semester. Experiments demonstrating the techniques of using a critical nuclear reactor for research and development work as well as for industrial operations are performed. The University of Maryland reactor is employed. Experiments on reactor startup and operation, shielding, control, neutron flux distributions, neutron and gamma spectrum, cross section measurements are included. Experiments will include practice with a nuclear reactor simulator. (Staff.)

*Ch. E. 311, 312. Nuclear Separation Engineering. (2, 2)*

First and second semesters. Two lectures a week. Prerequisites Ch. E. 140 or equivalent, and permission of instructor. Application of chemical engineering to the chemical and isotopic separations necessary for nuclear reactor operation. These separations include (1) processing of uranium, thorium, and other ores; (2) chemical separation of plutonium, uranium, fission products and other elements from materials irradiated in nuclear reactors; (3) treatment of radioactive wastes; (4) isotopic separation of U235; and (5) isotopic separation of heavy water and other desired materials. Ch. E. 311 concerns primarily chemical separations, while Ch. E. 312 concerns mostly isotopic separations and fuel cycles. Ch. E. 311 is not necessarily a prerequisite for Ch. E. 312. (Silverman.)

*Ch. E. 313. Selected Topics in Nuclear Engineering. (2)*

Two lectures a week. Prerequisite, permission of instructor. Topics of current interest and recent advances in the nuclear engineering field. Because of the rapid advances in the field, information on special topics of much practical importance is continually becoming available. Such information will be presented in this course. Since the content changes, re-registration may be permitted. (Staff.)

*Ch. E. 314. Special Problems in Nuclear Engineering.*

Credit hours to be arranged. Prerequisite, consent of instructor. Laboratory fee, \$10.00

per semester. Research or special study. This is for individual projects on a graduate level. (Staff.)

*Ch. E. 315. Non-Power Uses of Nuclear or High Energy Radiation. (2)*

Second semester. Two lectures a week. Prerequisite, permission of instructor. An engineering survey of the current applications and those under development. Included are such uses of radiation as synthesizing chemicals, preserving foods, control of industrial processes. Design of irradiation installations, e.g. cobalt 60 gamma ray sources, electronuclear machine arrangements, and specially built nuclear reactors are considered. (Silverman.)

*Ch. E. 320, 321. Advanced Nuclear Reactor Theory. (2, 2)*

First and second semesters. Two lectures a week. Prerequisites, Ch. E. 302, 303, year of advanced calculus, and permission of instructor. The theory of the calculation of critical masses, neutron flux distribution, neutron energy spectrum, kinetics of reactor behavior and gamma ray attenuation are presented. Multigroup treatment of reflected reactors, solution of the transport equations, perturbation theory, and other advanced calculation techniques are included. (Duffey.)

*Ch. E. 399. Research in Chemical Engineering. Research in Nuclear Engineering.*

Credit hours to be arranged. Laboratory fee, \$8.00 per semester (Research in Chemical Engineering). Laboratory fee, \$10.00 per semester (Research in Nuclear Engineering). The investigation of special problems and the preparation of a thesis in partial fulfillment of the requirements of an advanced degree. (Staff.)

## METALLURGY

*Met. 23. Nonferrous and Ferrous Metallurgy. (4)*

Second semester. Four lectures and demonstrations a week. Prerequisite, Chem. 3. The methods of extraction of the important metals and their fabrication. (Pennington.)

*Met. 68, 70. Mechanical Properties of Metals. (3, 3)*

First and second semesters. Two lectures and one laboratory a week. Prerequisites, Math. 21 and Phys. 21. Laboratory fee, \$8.00. Introduction to metal forming operations, ingot casting, forging, rolling; powder metallurgy; metal tests, tensile, impact, creep, fatigue, hardness. (Pennington.)

### *For Advanced Undergraduates and Graduates*

*Met. 104. Senior Metallurgical Seminar. (1, 1)*

One hour a week. Students prepare reports on current problems in metallurgy and participate in the discussion of such reports. The content of this course is constantly changing so a student may receive a number of credits by re-registration. (McWilliams.)

*Met. 150, 151. Physical Metallurgy. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, Math. 21 and Phys. 21. States of matter, physical structure of gases, liquids and solids; physical structure and constitution of metals; properties as related to atomic structures; x-ray and crystal structure effect of mechanical working, heat treatment and composition; constitution

## Metallurgy

and properties of alloy systems; phase transformation and diffusion theory; casting, shaping, welding, and testing metal objects. (Pennington.)

### *Met. 152, 153. Physical Metallurgy Laboratory. (2, 2)*

First and second semesters. Two three-hour laboratories per week. Prerequisites, Math. 21, Phys. 21, Met. 150, 151 (may be taken concurrently). Laboratory fee, \$8.00 per semester. These courses are associated with Met. 150, 151, but are not required with the lecture courses except in the case of metallurgy majors. (McWilliams.)

### *Met. 164, 166. Thermodynamics of Metallurgical Processes. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, Chem. 187, 189; Chem. 188, 190. The application of the principles of thermodynamics to metallurgical systems with emphasis on steel making; laws of chemical reactions; materials and reactions in steel making processes; applications of theory to steel making; applications of theory of selected non-ferrous systems. (Pennington.)

### *Met. 168, 170. Metallurgical Investigations. (2, 4)*

First semester. Two three-hour laboratory periods a week. Second semester. Three lectures and one three-hour laboratory period a week. Prerequisites, concurrent registration in or completion of Met. 182, 183. Laboratory fee, \$8.00 per semester. A study of the basic metals industry in which typical metallurgical processes in plant installations are considered in some detail. Class and individual assignments involving laboratory work and literature reviews. (Pennington, McWilliams.)

### *Met. 172. Light Metals and Alloys. (2)*

First semester. Two lectures a week. Prerequisites, Met. 150, 151. The physical metallurgy of aluminum, magnesium, titanium, and their alloys. Discussion of the classic researches that have determined the course of thinking regarding such metals and alloys. Pertinent phase diagrams of industrial importance to light alloys. The special metallurgical processes influencing the fabrication and use of light alloys. (Loring.)

### *Met. 182, 183. Optical and X-ray Metallography. (4, 4)*

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, Met. 150, 151 or permission of instructor. Laboratory fee, \$8.00 per semester. The application at an advanced level of the principles of metallography, with emphasis on the correlation of associated test procedures; constitution of metal systems and phase transformations; alloy steels; hardenability and tempering of quenched steels. (Kruger.)

### *Met. 188, 189. Alloy Steels I, II. (2, 2)*

First and second semesters. Two lectures per week. Prerequisites, graduate or undergraduate standing. (Met. 188 is not prerequisite to Met. 189.) Recent advances in the physical metallurgy of steel; ferrite, cementite, and austenite; the isothermal transformation of austenite; decomposition of austenite by continuous cooling; the effects of various metallurgical treatments on the mechanical properties of steels. The properties of quenched and tempered steels; importance of hardenability in engineering applications; calculation of hardenability; variables affecting hardenability; intensifiers; effects of alloying elements on the mechanical properties of steels; efficient use of alloying elements in steel. (Loring.)

## For Graduates

*Met. 220, 221. Solid Phase Reactions. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, Chem. 187, 189; Chem. 188, 190; Met. 182, 183; or permission of the instructor. The application of thermodynamics to the study of phase equilibria and transformations in metals; mechanism and rate determining factors in solid phase reactions in metals; order-disorder phenomena, diffusion processes, nucleation theory, precipitation from solid solution, eutectoid decomposition. (Moore.)

*Met. 224, 225. Advanced X-ray Metallography. (3, 3)*

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, Math. 114, 115; Met. 182, 183. Laboratory fee, \$8.00 per semester. Analysis of crystallography or martensite reactions, and transformations in general; analysis of complex diffracting systems.

*Met. 228. Seminar in Metallurgy. (1)*

First and second semesters. One meeting a week. Required of graduate students in metallurgical curriculum. Survey of metals literature, and oral presentation of prepared reports. The content of this course is constantly changing, so a student may receive a number of credits by re-registration. (Pennington.)

*Met. 229. Gases in Metals. (2)*

Second semester. Two lectures per week. Prerequisites, Met. 182, 183, or permission of the instructor. A consideration of the behavior of gases in metals with emphasis on the action of hydrogen in solid metals. (Pennington.)

*Met. 230, 231. Mechanical Metallurgy. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, Math. 114, 115; Met. 182, 183. Theory of plastic flow and rupture of polycrystalline metals; the influence of combined stresses, rate of deformation and temperature variation on the flow and rupture of metals. Flow and fracture in single crystals; theoretical crystal plasticity, theory of failure, recovery, recrystallization, and texture formation. (Moore.)

*Met. 232, 233. Advanced Physical Metallurgy. (3, 3)*

First and second semesters. Three lectures a week. Required of graduate students in metallurgical curriculum. The principles of X-ray metallography; the atomic theory of metals; magnetic materials; phase equilibria; review of important binary and ternary systems; diffusion and transformations in the solid state. (Moore.)

*Met. 238. Metallurgy of Nuclear Reactor Materials I. (2)*

First semester. Two lectures a week. Prerequisites, Met. 150-151. Theory and practice relating to metals such as uranium, thorium, and plutonium. The preparation of such metals in their purest state for use in nuclear reactors. The physical, metallurgical and mechanical characteristics of fissionable metals, their melting, casting, fabrication, and heat treatment. The alloys of uranium, thorium, and plutonium. Theoretical considerations and precautions in their preparation, investigation and use. Discussion of phase diagrams of nuclear alloy systems. (Loring.)



*Met. 239. Metallurgy of Nuclear Reactor Materials II. (2)*

Second semester. Two lectures a week. Prerequisite, Met. 238. Theory and practice of nuclear metals used in reactors including structural materials such as beryllium and zirconium, and metals used for transfer of heat such as sodium, bismuth, and various low melting alloys. Discussion of pertinent phase diagrams. Radiation damage, mass transfer, and other specialized effects. (Loring.)

*Met. 399. Research in Metallurgy.*

Credit hours to be arranged. Laboratory fee, \$8.00 per semester. The investigation of special problems and the preparation of a thesis in partial fulfillment of the requirements of an advanced degree. (Pennington.)

## CIVIL ENGINEERING

*Professors:* LOONEY, ALLEN, LEPPER, MAVIS AND OTTS.

*Associate Professors:* BARBER, COURNYN, GOHR AND WEDDING.

*Assistant Professor:* PIPER.

*Instructors:* GARBER, KRIZEK AND MULLEN.

*Lecturers:* BLOEM AND WALKER.

*C.E. 20. Statics and Dynamics. (3)*

First and second semesters for non-civil engineering students. Normally taken concurrently with Math. 21 and Phys. 21. Solution of force systems; forces in structures; friction; centroids and centers of gravity; moments of inertia. Introduction to such subjects as kinetics, work, power, energy, impulse and momentum; principles of plane motion. (Krizek, Wedding, Barber.)

*C.E. 21. Statics. (3)*

Required of first semester sophomores in civil engineering. Prerequisites, Math. 20 and Phys. 20 or concurrent registration. Solution of two and three dimensional force systems. Analysis of structures; stresses in trusses, cables and beams. Centroids and centers of gravity; distributed forces. Friction. Moments of inertia of areas. (Garber, Lepper, Gohr.)

*C.E. 22. Strength of Materials. (3)*

First and second semesters. A course for non-civil engineering students similar in content to C.E. 23 and integrated with C.E. 20, which is a prerequisite. (Garber, Krizek, Staff.)

*C.E. 23. Strength of Materials. (3)*

Required of second semester sophomores in civil engineering. Prerequisites, C.E. 21 and Math. 20; concurrent registration in Math. 21 and Phys. 20 or 21. Stress and strain in engineering materials; allowable stresses; thin-shelled pressure vessels; riveted and welded joints. Torsion. Stresses and deflection in determinate and indeterminate beams; composite beams. Column theory. (Krizek.)

*C.E. 24. Dynamics. (3)*

Required of juniors in civil engineering. Prerequisites, C.E. 23, Math. 21 and Phys. 21. Moments of inertia of areas and masses. Principles of dynamics; motion of a particle; translation and rotation of a rigid body; plane motion. Principles of work



and energy; impact forces on structural and machine members; impulse and momentum; simple mechanical vibrations. (Garber.)

*C.E. 30. Materials of Engineering. (2)*

First and second semesters. One lecture and one laboratory period a week. Prerequisites, Math. 21; concurrent registration in C.E. 23 and Phys. 21. The composition, manufacture, and properties of the principal materials used in engineering; performance of standard tests; interpretation of test results and of specifications. (Wedding.)

*For Advanced Undergraduates and Graduates*

*C.E. 100. Seminar. (2)*

Two hours per week. Required of second semester juniors in civil engineering. Prerequisites, C.E. 30, C.E. 110 and C.E. 140. Discussions on the profession of civil engineering with assigned student reports on special topics in selected fields designed to present a comprehensive and integrated picture of the various fields and to aid in the selection and assignment of senior technical electives. (Looney.)

*C.E. 101. Construction Planning. (3)*

Second semester. For second semester seniors in civil engineering. Study of selected plans, specifications and contracts with respect to planning a construction project. Effects of such elements as materials, plant and equipment, labor, organization, methods, scheduling, supervision, and overhead on job performance and costs. (Piper.)

*C.E. 110. Surveying I. (3)*

First semester. Two lectures and one laboratory period a week. Prerequisite, junior standing. Principles and methods of making plane and topographic surveys. Use, care and adjustment of instruments. Consistent accuracy and systematic procedures in field work, computation, and mapping are emphasized for obtaining desired objectives. (Gohr.)

*C.E. 111. Surveying II. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisite, C.E. 110. A continuation of C.E. 110 with emphasis on elementary problems of obtaining essential field data preliminary to design and locating points, lines and grades for selected engineering construction. (Gohr.)

*C.E. 112. Photogrammetry. (2)*

First semester. Two lectures and one laboratory period a week. Prerequisite, C.E. 110. The fundamental principles of terrestrial and aerial photographic surveying and their application to principles of map making. Laboratory exercises in the use of the stereoscope, stereocomparagraph, contour finder, interpretometer, and the vertical sketchmaster. (Gohr.)

*C.E. 121, 122. Advanced Strength of Materials. (3, 3)*

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, C.E. 23 and 30 and senior standing. Strength and deformation of deformable bodies. Unsymmetrical bending, buckling, combined stresses and torsion. Application of experimental data on materials to design problems. Correlation of analytical and experimental methods of analysis with design. Electrical strain gages, photoelasticity, brittle lacquer methods and various analogies. (Lepper, Wedding.)

*C.E. 140. Fluid Mechanics.* (3)

First semester. Two lectures and one laboratory period a week. Prerequisites, Math. 21; concurrent registration in C.E. 23 and Phys. 21. Required of juniors in civil engineering. A rational and experimental study of fluids at rest and in motion with special emphasis on water and oils. Principles of viscous and turbulent flow through pipes, orifices, nozzles and metering devices; impulse and momentum concepts. Flow through closed conduits and open channels; divided flow, pumps, turbines, dimensional analysis; laws of similarity. (Cournyn, Staff.)

*C.E. 141. Fluid Mechanics.* (3)

First and second semesters. Three lectures per week. Prerequisite, C.E. 20 or equivalent. Similar to C.E. 140, but with demonstration lectures replacing the laboratory work, for juniors in electrical engineering and fire protection. (Cournyn.)

*C.E. 142. Hydrology.* (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, C.E. 140 or 141. A study of the factors governing the supply of ground water and the flow of streams and their relation to water power, water supply, drainage and sanitary engineering. (Cournyn.)

*C.E. 150. Soil Mechanics.* (3)

First semester. Two lectures and one laboratory period a week. Prerequisites, C.E. 23, C.E. 24, and C.E. 30 or equivalents. Introductory study of the mechanics of aggregations and its application to earthworks and foundations. (Barber.)

*C.E. 160. Structural Analysis I.* (3)

First and second semesters. Two lectures and one laboratory period a week. Prerequisites, C.E. 23 and C.E. 30; concurrent registration in C.E. 30. Analytical and graphical determination of dead and live load induced stresses in statically determinate structures; influence lines, elements of slope and deflection. (Piper.)

*C.E. 161. Structural Analysis II.* (3)

First semester. Three lectures per week. Prerequisite, C.E. 160. A basic course in statically indeterminate structures. Analysis of continuous beams, rigid frames and trusses. (Looney.)

*C.E. 162. Structural Design (Steel).* (3)

First semester. Two lectures and one laboratory period a week. Prerequisite, C.E. 160. Structural design of steel and other metal beams, girders, and tension and compression members. Checking and proportioning of members and connections in accord with assigned specifications. Selected applications to design of simple metal structures. (Allen, Piper.)

*C.E. 163. Structural Design (Concrete).* (3)

Second semester. Two lectures and one laboratory period a week. Prerequisites, C.E. 160 and C.E. 161, but may be taken concurrently with the latter. Structural design of concrete beams, slabs, columns, walls and footings. Checking and proportioning of members in accord with assigned specifications. Selected applications of continuity in plane frames to the design of reinforced concrete structures. (Allen, Piper.)

*C.E. 170. Water Supply.* (3)

First semester. Two lectures and one laboratory period a week. Prerequisites, C.E. 140 and senior standing. Requirements of a municipal water supply—design, operation, maintenance, and administration (Otts.)

*C.E. 171. Sewerage. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisites, C.E. 140 and senior standing. The collection, treatment and disposal of sewage. (Otts.)

*C.E. 180. Transportation. (3)*

Second semester. Prerequisites, C.E. 23, C.E. 30 and C.E. 110. Engineering problems of transportation by airways, highways, pipe-lines, railways and waterways. Elementary dynamics of traffic and functional considerations of routes and terminals. (Wedding.)

*C.E. 181. Highways. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisite, C.E. 150. Location, design, construction, and maintenance of roads and pavements. Laboratory problems and field inspection trips. (Barber.)

*C.E. 199. Research. (3)*

First and second semesters. Prerequisite, senior standing. A special course arranged to meet the needs of exceptionally well prepared students for special study in a particular field. (Staff.)

*For Graduates**C.E. 221, 222. Advanced Strength of Materials. (3, 3)*

First and second semesters. Prerequisites, C.E. 23 and 30 or equivalent. Analyses for stress and deformation in engineering members by the methods of mechanics of materials and elementary theories of elasticity and plasticity. Problems in flexure, torsion, plates and shells, stress concentrations, indeterminate combinations, residual stresses, stability. (Lepper.)

*C.E. 223. Experimental Stress Analysis. (3)*

Second semester. Prerequisite, C.E. 221 or permission of instructor. Experimental methods of stress and strain analysis for static and impact forces. Use of structural models; brittle and plastic material methods; analogies; photoelasticity; optical, mechanical and electrical strain gages and instrumentation. (Wedding.)

*C.E. 224. Advanced Engineering Materials Laboratory. (3)*

First or second semester. Prerequisite, C.E. 23 and 30, or equivalent. Critical examination of the methods for testing engineering materials and structures under static, repeated, sustained and impact forces. Laboratory experiments for the determination of strength and stiffness of structural alloys, concrete and other construction materials. Critical examination of the effects of test factors on the determination of engineering properties. (Lepper, Wedding.)

*C.E. 225, 226. Advanced Properties of Materials. (3, 3)*

First and second semesters. Prerequisites, C.E. 221 and 222. Modern theories of the structure of matter applied to the study of elastic and plastic deformation of materials under static, repeated, sustained and impact forces. Elements of solid state physics, crystal structure, slip and dislocation theory; polycrystalline solids. Effects of low and high temperature, loading rates, and state of stress on mechanical properties and fracture. Critical study of tests and their application to strength of members. (Lepper.)

## Civil Engineering

### C.E. 227, 228. *Theories of Concrete and Granular Materials.* (3, 3)

First and second semesters. Prerequisites, C.E. 221, 222 and 224. Critical reviews of analytical and experimental investigations of the behavior of concretes under diverse conditions of loading and environment. Mechanics of granular aggregates and the chemistry of cements. Theories for the design of Portland cement and asphaltic concrete mixtures. Relations between laboratory testing and field experience. (Wedding.)

### C.E. 231, 232. *Theory of Concrete Mixtures I, II.* (3, 3)

Prerequisite, C.E. 30 or equivalent. Methods for the design of concrete mixtures, and a study of factors affecting the properties of the resulting concrete. (Wedding.)

### C.E. 241. *Hydraulic Engineering.* (3)

Prerequisite, C.E. 140, 141 or equivalent. Water power and flood control. Analysis of the principal features of a water power project with special reference to reservoir, waterway, dam, plant accessories, and power house equipment. Complete report on a water power project required, including costs and power valuation. (Cournyn.)

### C.E. 251. *Soil Mechanics.* (3)

Prerequisite, C.E. 150 or equivalent.

(Barber.)

### C.E. 252. *Advanced Foundations.* (3)

Prerequisites, C.E. 150, 162 and 163, or equivalent.

(Barber.)

### C.E. 261. *Civil Engineering Planning.* (3)

First semester. Prerequisites, C.E. 160, 161, 162 and 163, or equivalent. General planning of large engineering projects involving industrial plants, bridges, highways, railroads, and port developments. Emphasis on general planning followed by design construction and cost estimates. (Looney, Piper.)

### C.E. 262. *Civil Engineering Planning.* (3)

Second semester. Prerequisite, C.E. 261. City and regional planning and development. Special problems of municipal development. Emphasis on preparing engineering reports, financing and cost estimates. Preparation of presentation to public bodies.

(Looney, Piper.)

### C.E. 263. *Theory of Structural Design.* (3)

First semester. Prerequisite, C.E. 160, 161, 162 and 163, or equivalent. Advanced structural theory applied to the design of bridges and buildings. Methods of analysis for indeterminate structures, including moment distribution, Maxwell's method, virtual work, reciprocal theory, Muller Breslau's principle, and classical analytical methods. (Looney.)

### C.E. 264. *Theory of Structural Design.* (3)

Second semester. Prerequisite, C.E. 263. Correlation of theory, experience, and experiments in study of structural behavior, proportioning, and preliminary design. Special design problems of fatigue, buckling, vibrations, and impact. (Looney.)

### C.E. 265, 266. *Concrete Structures.* (3, 3)

First and second semesters. Prerequisites, C.E. 263 and 264. Examination of the fundamental basis for the design of reinforced concrete structures. Correlation of laboratory research, advanced structural theory and mechanics and design methods. Application to the design of modern forms of concrete structures, such as folded plates, slabs, thin shells, life slabs, prestressing, and precasting. (Looney.)



*C.E. 267, 268. Steel Structures. (3, 3)*

First and second semesters. Prerequisites, C.E. 263 and 264. Design of large steel structures, such as cantilever and continuous trusses and girders, steel arches, suspension bridges, and tall building frames. Special problems of secondary stresses, wind bracing, stability and bracing, and interaction and deformation stresses. Study of specifications, factor of safety and ultimate strength, and the relation between structural tests and design. (Looney.)

*C.E. 271, 272. Sanitary Engineering Design. (3, 3)*

First and second semesters. Prerequisites, C.E. 170 and 171, or equivalent. Practical problems in the design of sewer systems and appurtenances; sewage treatment plants; water collection and distribution systems; water purification plants. Selected design of structures related to the operation of water supply and sewerage systems and industrial waste treatment plants. (Otts.)

*C.E. 281, 282. Advanced Highway Engineering. (3, 3)*

First and second semesters. Prerequisites, C.E. 150, 180 and 181, or equivalent. Reconnaissance and location, surveys and plans, drainage, subgrade structure, low-cost roads, base courses, flexible and rigid pavement design. Highway organization planning economy, and finance. Geometric design and traffic engineering. (Barber.)

*C.E. 298. Seminar.*

First or second semester. Credit in accordance with work outlined by the Department. Prerequisite, consent of the Department of Civil Engineering. (Staff.)

*C.E. 399. Research.*

Credit in accordance with work done. (Staff.)

## DRAWING

*Dr. 1, 2. Engineering Drawing. (2, 2)*

First and second semesters. Two laboratory periods a week. Required of engineering freshmen. Prerequisites: for Dr. 1, Math. 18 or concurrent registration in Math. 18; for Dr. 2, Math. 18. Lettering, use of instruments, orthographic projection, auxiliary views, revolution, sections, pictorial representation, dimensioning, fasteners, technical sketching, and working drawings. (Wockenfuss and Staff.)

## ELECTRICAL ENGINEERING

*Professors:* CORCORAN, REED, WAGNER AND WEBER.

*Associate Professors:* HODGINS, SMALL, PRICE, AND RUTELLI.

*Assistant Professors:* HOCHULI AND SIMONS.

*Instructors:* GINNINGS, HAHN, JONES, THOMPSON AND RUMBAUGH.

*Lecturers:* CHU, FREEMAN, SCHULMAN, VANDERSLICE, BEACH, HORTON, KATZIN, OHMAN, SCHUCHARD, TRENT AND WATTERS.

*E. E. 1. Basic Electrical Engineering. (4)*

Second semester. Three lectures and one laboratory period a week. Prerequisites, Math. 21 and Phys. 21 or concurrent registration. Laboratory fee, \$4.00. Required of



## *Electrical Engineering*

sophomores in electrical engineering. Basic concepts of electric potential, current, power, and energy; d-c circuit analysis by the mesh-current and nodal methods; network theorems; magnetic field concepts; magnetic effects of engineering importance.

(Corcoran, Thompson, Rumbaugh.)

### *For Advanced Undergraduates*

#### *E. E. 50. Fundamentals of Electrical Engineering. (3)*

First semester. Three lectures a week. Prerequisites, Math. 21 and Phys. 21. Required of juniors in civil engineering. Principles of direct and alternating currents; power circuits and distribution systems; direct and alternating current machines and applications; introduction to electronic devices. (Jones.)

#### *E. E. 51, 52. Principles of Electrical Engineering. (4, 4)*

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, Math. 21 and Phys. 21. Laboratory fee, \$4.00. Required of juniors in aeronautical and mechanical engineering, and seniors in chemical engineering. A study of elementary direct-current and alternating-current circuits, polyphase circuits; magnetic circuits. Principles of operation of direct and alternating current machinery and transformers. Brief study of vacuum tubes operated as rectifiers and amplifiers. (Small, Hochuli.)

#### *E. E. 60. Electricity and Magnetism. (3)*

First semester. Prerequisites, Math. 21, Phys. 21, and E. E. 1. Required of juniors in electrical engineering. Electromagnetism as applied to electrical engineering; electric field theory with emphasis on capacitance calculations, magnetic field theory with emphasis on inductance calculations. Uses vector notation. (Reed, Weber.)

#### *E. E. 65. Direct-Current Machinery. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisites, Math. 21, Phys. 21, and E. E. 1. Laboratory fee, \$4.00. Required of juniors in electrical engineering. Construction, theory of operation, and performance characteristics of direct-current generators, motors, and control apparatus. Experiments on the operation and characteristics of direct-current generators and motors. (Hodgins.)

### *For Advanced Undergraduates and Graduates*

#### *E. E. 100. Alternating-Current Circuits. (4)*

First semester. Three lectures and one laboratory period a week. Prerequisites, "C" average (by courses) in Math. 20-21, Phys. 20-21, and E.E. 1. Laboratory fee, \$4.00. Required of juniors in electrical engineering. Single- and polyphase-circuit analysis under sinusoidal and non-sinusoidal conditions of operation. Mesh-current and nodal methods of analysis. Harmonic analysis by the Fourier series method. Theory and design of tuned coupled circuits. (Price, Simons.)

#### *E. E. 101. Engineering Electronics. (4)*

Second semester. Three lectures and one laboratory period a week. Prerequisite, E. E. 100. Required of juniors in electrical engineering. Laboratory fee, \$4.00. Theory and applications of electron tubes and associated circuits with emphasis on equivalent-circuit and graphical analysis of audio amplifiers; theory of feedback amplifiers. (Price, Simons.)

*E. E. 102. Alternating-Current Machinery. (4)*

First semester. Three lectures and one laboratory period a week. Prerequisites, E. E. 65 and E. E. 100. Required of seniors in electrical engineering. Laboratory fee, \$4.00. The operating principles of alternating-current machinery considered from theoretical, design, and laboratory points of view. Synchronous generators and motors; single and polyphase transformers; three-phase induction generators and motors; single-phase induction motors. (Hodgins, Reed.)

*E. E. 103. Engineering Analysis. (2)*

First semester. Two lectures a week. Prerequisite, E. E. 1. Analysis of physical systems with emphasis on the selection and application of appropriate mathematical methods; elements of probability and statistics. (Staff.)

*E. E. 104. Communications. (3)*

Second semester. Three lectures a week. Prerequisites, E. E. 60 and E. E. 100. Required of juniors in electrical engineering. Long-line theory applied to audio-frequency and ultra-high-frequency systems. Elements of filter theory; impedance matching; Maxwell's equations in rectangular and cylindrical coordinates and in scalar notation; elements of rectangular wave-guide theory. (Reed, Simons.)

*E. E. 105, 106. Radio Engineering. (4, 4)*

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, E. E. 101, E. E. 105. Laboratory fee, \$4.00. Required of seniors in electrical engineering. Characteristics of radio-frequency circuits including the design of tuned couple circuits and Class C amplifiers. Amplification, oscillation, modulation, and detection with particular emphasis on radio-frequency amplification and broadcast-range reception. Elements of wave propagation and antenna systems. (Wagner, Price.)

*E. E. 107. Electrical Measurements. (4)*

Second semester. Three lectures and one laboratory period a week. Prerequisites, E. E. 100 and Math. 64. Laboratory fee, \$4.00. Measurement and calibration techniques employing ballistic galvanometers, potentiometers, bridges, electromagnetic and cathode-ray oscillographs, watt-hour meters, and electronic instruments. (Thompson.)

*E. E. 108. Electric Transients. (3)*

First semester. Three lectures a week. Prerequisites, E. E. 101, Math. 64. Required of seniors in electrical engineering. Current, voltage, and power transients in lumped-parameter networks. Introduction and utilization of Laplace transforms. (Price, Simons.)

*E. E. 109. Pulse Techniques. (3)*

Second semester. Three lectures a week. Prerequisites, E. E. 108, Math. 64. Required of seniors in electrical engineering. Generation, shaping, amplification, and delay of non-sinusoidal wave-forms. Circuit design techniques and application to radar, television, and computers. (Simons, Schulman.)

*E. E. 110. Transistor Circuitry. (3)*

Second semester. Three lectures a week. Prerequisite, E. E. 101. P-n junction theory; point-contact and junction type transistors; transistor parameters; equivalent circuits; typical transistor amplifier and oscillator circuits. (Simons.)

## *Electrical Engineering*

### *E. E. 114. Applied Electronics. (3)*

First and second semesters. Three lectures a week. Prerequisite, E. E. 101. Detectors and discriminators; gas tube characteristics and associated circuits; photoelectric tubes and associated circuits; rectifiers and regulators; vacuum tube instruments. (Staff.)

### *E. E. 115. Feedback Control Systems. (3)*

Second semester. Three lectures a week. Prerequisites, E. E. 101 and E. E. 108. Servomechanisms and automatic regulators; investigations of electric, hydraulic, pneumatic, and mechanical elements; analysis of system differential equations and development of transfer functions; stability criteria. (Price.)

### *E. E. 116. Feedback Control Systems Laboratory. (1)*

Second semester. One laboratory period a week. Prerequisite, E. E. 115 or concurrent registration in E. E. 115. Laboratory fee, \$4.00. Laboratory exercises involving some of the basic concepts of feedback control systems.

### *E. E. 117. Power Transmission and Distribution. (3)*

First semester. Three lectures a week. Prerequisite, concurrent registration in E. E. 102. Inductance and capacitance calculations of polyphase transmission lines on a per wire basis; effective resistance calculations and depth-of-penetration formula; generalized parameters of four-terminal networks and long-line theory applied to power distribution systems; use of transmission line charts. (Reed.)

### *E. E. 120. Electromagnetic Waves. (3)*

Second semester. Three lectures a week. Prerequisite, Math. 64, senior standing in electrical engineering or physics. The basic mathematical theory of electromagnetic wave propagation employing Maxwell's equations in scalar and vector form and in generalized coordinates; application to wave-guide transmission; propagation in space. (Reed.)

### *E. E. 130. Electronic Analog Computers. (3)*

First semester. Three lectures a week. Prerequisites, E. E. 101, Math. 64. Principles of electronic computers of the analog type. Analog computing components, operational amplifiers, d-c amplifiers, instrument servos, multipliers, and function generators. (Chu.)

### *E. E. 131. Electronic Digital Computers. (3)*

Second semester. Three lectures a week. Prerequisites, E. E. 101, Math. 64. Principles of electronic computers of the digital type. Digital computing operations, basic computing and control circuits, logical design, arithmetic unit, memory systems, and control units. (Chu.)

### *E. E. 160, 161. Vacuum Tubes. (3, 3)*

First and second semesters. Three lectures a week. Prerequisite, Math. 64, senior standing in electrical engineering or physics. Electron emission; laws of electron motion; space charge effects; noise in vacuum tubes; magnetic lenses; klystrons; magnetrons; photoelectric tubes; other special-purpose tubes. (Weber.)

## *For Graduates*

### *E. E. 200. Symmetrical Components. (3)*

First semester. Three lectures a week. Prerequisite, E. E. 102. Application of the

method of symmetrical components to synchronous generators, transmission lines, transformers, static loads possessing mutual coupling, and induction motor loads. Methods of calculating positive, negative, and zero sequence reactances, of transmission lines. Complete network solutions in terms of symmetrical components and comparison of these solutions with those obtained by classical methods. Methods of measuring positive, negative, and zero sequence reactances of synchronous generators. (Reed.)

*E. E. 201. Electromagnetic Theory. (3)*

Second semester. Three lectures a week. Prerequisite, E. E. 120 or E. E. 215. Theoretical analysis and engineering applications of Laplace's, Poisson's and Maxwell's equations. (Weber.)

*E. E. 202, 203. Transients in Linear Systems. (3, 3)*

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical or mechanical engineering or physics. Operational circuit analysis; the Fourier integral; transient analysis of electrical and mechanical systems and vacuum tube circuits by the Laplace transform method. (Wagner.)

*E. E. 206, 207. Microwave Engineering. (3, 3)*

First and second semesters. Three lectures a week first semester and two lectures and one laboratory period a week second semester. Prerequisite, E. E. 201 or E. E. 216. Laboratory fee, E.E. 207, second semester, \$4.00. Basic considerations in solving field problems by differential equations; circuit concepts and their validity at high frequency; propagation and reflection of electromagnetic waves; guided electromagnetic waves; high-frequency oscillators and tubes, radiation engineering. (Weber.)

*E. E. 209. Stability in Power Systems. (3)*

Second semester. Three lectures a week. Prerequisite, E. E. 200. An extension of symmetrical components. E. E. 200, as applied to power systems; study of the stability problem; the swing equation and its solution; the equal-area and Routh's criteria for stability; solutions of faulted three-phase networks; system design. (Reed.)

*E. E. 212, 213. Servomechanism. (3, 3)*

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical or mechanical engineering or physics. (It is desirable that the student should have had E. E. 202.). The design and analysis of regulatory systems, emphasizing servo-mechanisms. Regulatory systems are analyzed by means of the governing differential equations to provide background for more practical studies of frequency spectrum analysis. Characteristics of actual systems and practical considerations are studied. (Price.)

*E. E. 215, 216. Radio Wave Propagation. (3, 3)*

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical engineering, physics, or mathematics. Maxwell's wave equation; concept of retarded magnetic vector potential; propagation over plane earth; propagation over spherical earth; refraction; meteorological effects; complex antennas; air-to-air propagation; lobe modulation. (Reed.)

*E. E. 218, 219. Signal Analysis and Noise. (3, 3)*

First and second semesters. Three lectures a week. Prerequisite, undergraduate major in electrical engineering or physics. Fourier series and integrals; phase and frequency



modulation; noise figures of linear systems; shot effect; power spectra; applications of correlation function; properties of noise. (Freeman.)

### *E. E. 220, 221. Theory of Communication. (3, 3)*

First and second semesters. Three lectures a week. Prerequisite, E. E. 219. Measure of information and channel capacity; methods of describing random signals and circuit analysis involving those signals. The statistical theory of communication systems. Systems which are statistically optimum. (Weber, Hogan.)

### *E. E. 222. Graduate Seminar. (1-3)*

Second semester. Prerequisite, approved application for candidacy to the degree of Master of Science or Doctor of Philosophy in electrical engineering. Seminars are held on topics such as micro-wave engineering, radiation engineering, non-linear circuit analysis, tensor analysis, and other topics of current interest. Since the subject matter is continually changing, a student may receive a number of credits by re-registration. (Corcoran, Reed, Weber, and Wagner.)

### *E. E. 230. Mathematics of Circuit Analysis. (3)*

First semester. Three lectures a week. Prerequisite, undergraduate major in electrical engineering or physics. The mathematics of circuit analysis, including determinants, matrices, complex variable, and the Fourier integral. (Vanderslice.)

### *E. E. 231. Active Network Analysis. (3)*

Second semester. Three lectures a week. Prerequisite, E. E. 230. The complex frequency plane; conventional feedback amplifier theory; Bode's mathematical definitions of feedback and sensitivity; theorems for feedback circuits; stability and physical realizability of electrical networks; Nyquist's and Routh's criteria for stability. (Corcoran, Vanderslice.)

### *E. E. 232, 233. Network Synthesis. (3, 3)*

First and second semesters. Three lectures a week. Prerequisite, E. E. 231 or equivalent. Design of driving-point and transfer impedance functions with emphasis on the transfer loss and phase of minimum-phase networks; flow diagrams; physical network characteristics, including relations existing between the real and imaginary components of network functions; modern methods of network synthesis. (Vanderslice.)

### *E. E. 235. Applications of Tensor Analysis. (3)*

First semester. Three lectures a week. Prerequisite, E. E. 202 or E. E. 230. The mathematical background of tensor notation which is applicable to electrical engineering problems. Applications of tensor analysis to electric circuit theory and to field theory. (Wagner.)

### *E. E. 399. Electrical Engineering Research.*

Prerequisite, approved application for candidacy to the degree of Master of Science or Doctor of Philosophy in electrical engineering. Six semester hours of credit in E. E. 399 are required of M. S. degree candidates and a minimum of eighteen semester hours is required of Ph.D. candidates. A thesis covering an approved research problem and written in conformity with the regulations of the Graduate School is a partial requirement for either the degree of Master of Science or the degree of Doctor of Philosophy in electrical engineering. (Graduate Staff.)



# MECHANICAL ENGINEERING

*Professors:* SHREEVE AND JACKSON.

*Associate Professors:* ALLEN, HAYLECK AND EYLER.

*Assistant Professors:* HENNICK, WOCKENFUSS, CATHER AND SAYRE.

*Instructors:* ELKINS, SHIPPLING, SWEARMAN, HANLEY, THOMAS, LLOYD, MARKS, WISE AND OETTING.

*Lecturer:* HABERMAN.

## *For Undergraduates*

### *M.E. 20, 21. Manufacturing Tools and Processes. (1, 1)*

First and second semesters. Laboratory fee, each semester, \$3.00. A study of tools and methods used in industry to fabricate materials of engineering. One combination lecture and laboratory period a week. Machine tools and processes, casting and forming processes, welding and allied processes, and related fabricating techniques and processes. (Hennick, Wockenfuss, Swearman.)

### *M.E. 22, 23. Statics and Mechanics of Materials. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, first semester, Math. 20, Phys. 20 or taken concurrently; and second semester, Math. 20, Phys. 20; Math. 21, Phys. 21 or taken concurrently. Force systems, equations of equilibrium, distributed forces, trusses and beams, shear and moment diagrams; stresses, strains, deflections, statically indeterminate beams and structures, columns, methods of energy, Castigliano's theorem and applications. (Hayleck and Staff.)

### *M.E. 24. Dynamics. (3)*

First semester. Three lectures a week. Prerequisites, Math. 21, Phys. 21, or taken concurrently. Accelerated motion of particles, bodies, and machine parts. D'Alembert's principle, equations of motion and their solution. Methods of momentum, impulse, energy, balancing, introduction to vibrations. (Hayleck, Staff.)

## *For Advanced Undergraduates and Graduates*

### *M.E. 100. Thermodynamics. (3)*

First semester. Two lectures and one laboratory period a week. Prerequisites, Phys. 20, Math. 21, concurrently. Required of juniors in mechanical and aeronautical engineering. The properties, characteristics, and fundamental equations of gases, and vapors. Application of the first and second laws of thermodynamics in the analysis of basic heat engines, air compression, and vapor cycles. Flow and non-flow processes for gases and vapors. (Eylar, Sayre.)

### *M.E. 101. Heat Transfer. (3)*

Second semester. Three lectures a week. Prerequisites, M.E. 100, M.E. 102 concurrently. Basic principles of heat transfer, including a study of conduction by steady state and variable heat flow; free and forced convection, radiation, evaporation and condensation of vapors, and the application of the principles of heat transfer to design problems. (Eylar.)

## *Mechanical Engineering*

### *M.E. 102. Fluid Mechanics. (3)*

Second semester. Two lectures and one laboratory a week. Prerequisites, M.E. 100. Laboratory fee, \$3.00. Fluid statics, Bernoulli's equation, principles of impulse and momentum, analysis, measurements of flow and fluid properties, dimensional analysis and dynamic similitude, hydraulic machinery. (Sayre.)

### *M.E. 103. Metallography. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisites, M.E. 20, 21, 23. Laboratory fee, \$3.00. A study of the structure of metals and alloys as related to their properties. Study of crystallation, plastic deformation, constitution diagrams, heat treatment and effect of alloying elements on ferrous and non-ferrous materials. Laboratory work in thermal analysis, microscopy heat treatment and testing of metals. (Jackson, Eyster.)

### *M.E. 104. Kinematics. (2)*

Second semester. One lecture and one laboratory period a week. Prerequisites, M.E. 24, Math. 21. A study of velocity, acceleration, and displacement of mechanisms, cam motion, gearing and gear trains. (Hayleck.)

### *M. E. 105. Principles of Mechanical Engineering. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisites, Phys. 21, Math. 21. Required of seniors in civil engineering. Elementary thermodynamics and the study of heat, fuel and combustion in the production and use of steam for generation of power. Supplemented by laboratory tests and trips to industrial plants. (Cather, Sayre.)

### *M.E. 107. Heat Power—Chemical and Nuclear. (4)*

Second semester. Three lectures and one laboratory period a week. Prerequisite, M.E. 100. Laboratory fee, \$3.00 per semester. Required of seniors in electrical engineering. The study of power plant cycles using as heat sources nuclear reactors, solid, liquid and gaseous fuels. Includes analysis and design of such equipment as: reactors, boilers, turbines, regenerators and their accessories. (Cather.)

### *M.E. 150, 151. Heat Power—Chemical and Nuclear. (4, 4)*

First and second semesters. Three lectures and one laboratory period a week. Prerequisites, M.E. 100; M.E. 102, concurrently. Required of seniors in mechanical engineering. The study of all types of power plants including internal combustion engines, gas turbines, and steam stations; using all types of heat sources including nuclear reactors, solid, liquid and gaseous fuels. Includes the study of such cycles as Otto, Diesel, Brayton and Rankine. Analysis and design of various components such as: reactors, regenerators, turbines, compressors, boilers and condensers. (Shreeve, Cather.)

### *M.E. 152, 153. Mechanical Engineering Design. (4, 3)*

First semester. Two lectures and two laboratory periods a week. Second semester. Two lectures and one laboratory period a week. Prerequisites, M.E. 103, M.E. 104. Design of machine elements. Machine design projects. Mechanical vibrations. (Jackson, Hayleck.)

### *M.E. 154, 155. Mechanical Laboratory. (2, 2)*

First and second semesters. One lecture and one laboratory period a week. Prerequisite, senior standing. Required of seniors in mechanical engineering. Laboratory

fee, \$3.00 per semester. Experiments on fuels and lubricants, steam engine and turbines, air compressors, gasoline and diesel engines and various other mechanical equipment. Written reports are required on all tests. (Staff.)

*M.E. 156. Heating and Air Conditioning. (3)*

Second semester. Two lectures and one laboratory period a week. Prerequisites, M.E. 100; M.E. 101, concurrently. The fundamentals of heating and cooling load computations. Basic information on heating and air conditioning systems for residential and industrial use. (Allen, Eyler.)

*M.E. 157. Refrigeration. (3)*

First semester. Two lectures and one laboratory period a week. Prerequisites, M.E. 100, M.E. 101, M.E. 102 concurrently. Laboratory fee, \$3.00 per semester. Thermodynamic analysis of air, vapor compression, absorption and water refrigeration systems. Characteristics of refrigerants. Study of refrigeration as applied to cooling and dehumidification in air conditioning. Low temperature refrigeration, the heat pump, and other special topics. (Allen, Eyler.)

*M.E. 158, 159. Applied Elasticity. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, Math. 64, M.E. 23. Advanced strength of materials involving beam problems, curved bars, flat plates, shells, statically indeterminate structures. Methods of work and energy.

*M.E. 160, 161. Advanced Dynamics. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, Math. 64, M.E. 24. Linear, plane and three dimensional motion, moving axes, Lagrange's equation, Hamilton's principle, balancing, vibration, gyroscope, etc.

*M.E. 162, 163. Advanced Thermodynamics. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, M.E. 100, 102; Math. 64. Advanced problems in thermodynamics on compression of gases and liquids, combustion and equilibrium. Problems in advanced heat transfer. (Allen, Shreeve.)

*M.E. 164. Research. (3)*

First and second semesters. Prerequisite, "B" average and senior standing in mechanical engineering. Arrangements must be made in advance of registration. (Staff.)

*M.E. 165. Creative Engineering. (3)*

First and second semesters. Prerequisite, senior standing in mechanical engineering. Solving design problems in engineering with emphasis on the creative approach. (Shreeve.)

*M.E. 166, 167. Advanced Fluid Mechanics. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, M.E. 102, Math. 64. Hydrodynamic theory, Navier Stokes equations, subsonic and supersonic compressible flow, normal shock theory. Engineering applications. (Sayre.)

*For Graduates*

*M.E. 200, 201. Advanced Dynamics. (3, 3)*

First and second semesters. Prerequisites, M.E. 24, Math. 64, M.E. 153, M.E. 155.

## Mechanical Engineering

Mechanics of machinery. Dynamic forces. Balancing of rotating parts. Vibrations and vibration damping. Critical speeds.

### M.E. 202, 203. *Applied Elasticity.* (3, 3)

First and second semesters. Prerequisites, M.E. 23, Math. 64, M.E. 153. Advanced methods in structural and experimental stress analysis. Advanced strength of materials involving beam problems, curved bars, thin plates and shells, buckling of bars, plates and shells, etc. Advanced work in stress concentrations, plastic deformations, etc., and problems involving instability of structures.

### M.E. 204, 205. *Advanced Thermodynamics.* (3, 3)

First and second semesters. Three lectures a week. Prerequisites, M.E. 101, M.E. 151, Math. 64. Advanced problems in thermodynamics on compression of gases and liquids, combustion and equilibrium, humidification and refrigeration and availability. Problems in advanced heat transfer covering the effect of radiation, conduction, and convection, steady and unsteady flow, evaporation and condensation. (Shreeve, Allen.)

### M.E. 206, 207. *Advanced Machine Design.* (3, 3)

First and second semesters. Three lectures a week. Prerequisites, Math. 64, M.E. 153. Application of advanced methods of stress analysis to design of special stationary and moving machine parts, including rotating disk, bearings, thick wall cylinders, screw fastenings, crankshafts, etc. Application of linear and torsional vibration and balancing in the design of machine members. Complete design of a machine. Study of current design literature. (Jackson.)

### M.E. 208, 209. *Steam Power Design.* (3, 3)

First and second semesters. One lecture and two laboratory periods a week. Prerequisite, M.E. 151. Design and specifications of power plants with special emphasis on central stations heated by conventional fuels and nuclear reactors. Design of all components including turbines, boilers, and reactors. Problems of water treatment and waste disposal (atomic and ash) are considered. (Shreeve.)

### M.E. 210, 211. *Advanced Fluid Mechanics.* (3, 3)

First and second semesters. Prerequisites, M.E. 102, Math. 64 or equivalent. Potential flow theory; three dimensional flow examples; application of complex variables to two-dimensional flow problems; Blasius theorem, circulation and Joukowski hypothesis; engineering applications to cavitation predication and calculation of pressure distribution; introduction to viscous flow and theory of the boundary layer. (Saj, re.)

### M.E. 212, 213. *Advanced Steam Power Laboratory.* (2, 2)

First and second semesters. One lecture and one laboratory period a week. Prerequisite, registration in M.E. 204, 205. Research on advanced steam power problems to illustrate and advance steam power theory. Power plant heat balances. (Shreeve.)

### M.E. 214, 215. *Advanced Applied Mechanics Laboratory.* (2, 2)

First and second semesters. One lecture and one laboratory period a week. Prerequisites, registration in M.E. 200, 201 and M.E. 202, 203. Illustrative experiments and research on difficult problems in stress analysis. Photoelasticity. Mechanical vibrations. Critical speeds. Dynamic stresses. Fatigue of materials.

### M.E. 216, 217. *Advanced Internal Combustion Engine Design.* (3, 3)

First and second semesters. One lecture and two laboratory periods a week. Pre-



requisites, M.E. 150, 151; M.E. 152, 153 and registration in M.E. 200, 201 and M.E. 204, 205. Each student will carry out complete designs of internal combustion engines. (Shreeve.)

*M.E. 218, 219. Advanced Internal Combustion Engine Laboratory. (2, 2)*

First and second semesters. One lecture and one laboratory period a week. Prerequisite, registration in M.E. 216, 217. Advanced laboratory tests and problems in the design of internal combustion engines. (Shreeve.)

*M.E. 220. Seminar.*

Credit in accordance with work outlined by mechanical engineering staff. Prerequisite, graduate standing in mechanical engineering. (Staff.)

*M.E. 221. Research.*

Credit in accordance with work outlined by mechanical engineering staff. Prerequisite, graduate standing in mechanical engineering. Research in any field of mechanical engineering as applied mechanics, heat transfer, thermodynamics, heat, power, etc. (Staff.)

*M.E. 222. Advanced Metallography. (3)*

First semester. Two lectures and one laboratory period a week. Prerequisites, M.E. 103, M.E. 23. Advanced study of the structure and properties of metals and alloys. Study of the latest developments in ferrous and non-ferrous alloys including stainless steels, high temperature steels, tool steels, aluminum, magnesium and copper alloys. Study of inspection of metals by the use of x-rays, spectograph, metallograph and magniflux. Review of current literature. (Jackson.)

*M.E. 223, 224. Steam and Gas Turbine Design. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, M.E. 101, M.E. 151, Math. 64. Study of nozzles and blades, with application to all types of turbines and compressors based on detailed heat calculations. Design of regenerators and combustors for gas turbines. Applications to jet propulsion. Fundamentals of rocket, pulse jet and ram jet design. (Shreeve.)

*M.E. 225, 226. Advanced Properties of Metals and Alloys. (2, 2)*

First and second semesters. Two lectures a week. Prerequisite, M.E. 23, M.E. 103, M.E. 152, M.E. 153. Properties of metals including tensile, impact, fatigue, damping capacity, hardenability, wear, etc. Fabrication problems and selection of metals and alloys. Service failures. Properties required for nuclear engineering applications. Properties of metals at elevated and extremely low temperatures. (Jackson.)

*M.E. 227, 228. Theory of Elasticity. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, M.E. 202, 203. Stress and strain at a point. Relation between stresses and strains, general equations of elasticity, plane strain and plane stress, torsion, bending, axially symmetric distribution of stress, plates, thermal stresses, strain energy and approximate methods.

*M.E. 229, 230. Jet Propulsion. (3, 3)*

First and second semesters. Three lectures a week. Prerequisites, M.E. 101, M.E. 150, M.E. 151. Types of thermal jet units. Fluid reaction and propulsive efficiency. Performance of rockets, aerothermodynamics, combustion chemical kinetics, aerodynamics of high speed air flow. Principles and design of solid and liquid propellant rockets. Design of turbojets and aerojets, ramjets and hydroduct units, including combustion chambers, turbines and compressor. (Shreeve.)



## Fire Protection

### M.E. 231, 232. *Advanced Heat Transfer.* (3, 3)

First and second semesters. Three lectures a week. Prerequisites, M.E. 101. Advanced problems covering effects of radiation, conduction, convection, evaporation and condensation. Study of research literature on heat transfer. (Shreeve, Allen.)

### M.E. 233, 234. *Compressible Flow.* (3, 3)

First and second semesters. Prerequisites, M.E. 100, M.E. 102, Math. 64 or equivalent. One dimensional subsonic and supersonic flow; compressible flow in ducts and nozzles; two and three dimensional subsonic and supersonic flow; similarity rules; normal and oblique shock waves. (Sayre.)

## FIRE PROTECTION

Professor: BRYAN.

### F. P. 104. *Essentials of Fire Protection.* (3)

First semester. Three lectures a week. An introductory course surveying the entire area of fire prevention and fire protection. A study of the chemistry of combustion and an analysis of the properties of matter affecting fire behavior. Detailed examination of the basic fire hazards.

### F. P. 105. *Fire Protection Organization.* (3)

Second semester. Three lectures a week. The evaluation and examination of fire loss records, and the economic aspects of fire protection. A study of the organization and administration of municipal and industrial fire protection.

### F. P. 110. *Installations and Equipment.* (4)

Second semester. Three lectures and one laboratory period a week. The design and installation requirements of standard and special extinguishing systems. Standards of types, installation, and maintenance of automatic sprinkler and fire alarm systems. The principles of fire extinguishment with laboratory tests.

### F. P. 111. *Special Hazards and Problems.* (4)

Second semester. Three lectures and one laboratory period a week. An evaluation and consideration of the special hazards in fire protection. A study of present and future problems, with the students selecting field or laboratory research problems.

### F. P. 112. *Tactics and Operations.* (3)

First semester. Two lectures and one laboratory period a week. A study of the principal factors involved in the strategy and utilization of men and equipment for effective fire extinguishment. Laboratory and field study of operational and hydraulics problems.

### F. P. 117. *Technical Projects.* (4)

First semester. Three lectures and one laboratory period a week. An examination of the specialized areas of fire protection and the development and problems in these areas. Student development and discussion of research projects in specialized areas of fire protection.

### F. P. 120. *Insurance Rating and Schedules.* (3)

First semester. Two lectures and one laboratory period a week. A study of the insurance grading and rating schedules and their principles of application. The examination of specific laws, codes, and ordinances. Laboratory practice in the preparation of reports, and diagrams.

## OTHER COURSES REQUIRED OF OR ELECTED BY ENGINEERING STUDENTS

### AIR SCIENCE

*Professor and Head:* AYLESWORTH.

A. S. 1, 2. *Basic Air Science.* (2, 2)

A. S. 3, 4. *Basic Air Science.* (2, 2)

A. S. 101, 102. *First Year Advanced Air Science.* (3, 3)

A. S. 103, 104. *Second Year Advanced Air Science.* (3, 3)

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Note.—Six credits of A. S. 101, 102, 103, 104 may be substituted for H. 5, 6—History of American Civilization (3, 3) in curricula in the College of Engineering.

### ART

*Professor and Head:* JAMES P. WHARTON.

Art. 22. *History of American Art.* (3)

Elective Group II of the American Civilization Program.

### BUSINESS ORGANIZATION AND ADMINISTRATION

*Professor and Head:* JOHN H. FREDERICK.

B. A. 191. *Property Insurance* (3)

Prerequisite, Econ. 32 or 37.

### CHEMISTRY \*

*Professor and Acting Head:* WOODS.

Chem. 1, 3. *General Chemistry.* (4, 4)

Prerequisite, 1 year high school algebra or equivalent. (Chem. 3 is usually offered in Summer School).

Chem. 19. *Elements of Quantitative Analysis.* (4)

Prerequisite, Chem. 3. (Usually offered in Summer School).

Chem. 35, 37. *Elementary Organic Chemistry.* (2, 2)

Prerequisite, Chem. 3. (Chem. 37 is usually offered in Summer School).

Chem. 36, 38. *Elementary Organic Laboratory.* (2, 2)

Prerequisites, Chem. 35, 37, or concurrent registration therein. (Chem. 38 is usually offered in Summer School).

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\*Laboratory fees in chemistry courses listed here are \$10.00 per laboratory course per semester.

## Other Course Offerings

*Chem. 187, 189. Physical Chemistry. (3, 3)*

Prerequisites, Chem. 19 or 21; Phys. 20, 21; Math. 20, 21; or consent of instructor.  
This course must be accompanied by Chem. 188, 190.

*Chem. 188, 190. Physical Chemistry Laboratory. (2, 2)*

A laboratory course for students taking Chem. 187, 189.

## ECONOMICS

*Professor and Head: DILLARD.*

*Econ. 31, 32. Principles of Economics. (3, 3)*

Prerequisite, sophomore standing.

*Econ. 37. Fundamentals of Economics. (3)*

Not open to students who have credit in Econ. 31 and 32. Not open to freshmen.

*Econ. 102. National Income Analysis. (3)*

Prerequisite, Econ. 32.

*Econ. 131. Comparative Economic Systems. (3)*

Prerequisite, Econ. 32 or 37.

*Econ. 132. Advanced Economic Principles. (3)*

Prerequisite, Econ. 32.

*Econ. 142. Public Finance and Taxation. (3)*

Prerequisite, Econ. 32 or 37.

*Econ. 160. Labor Economics. (3)*

Prerequisite, Econ. 32 or 37.

*Econ. 170. Monopoly and Competition. (3)*

Prerequisite, Econ. 32 or 37.

*Econ. 171. Economics of American Industries. (3)*

Prerequisite, Econ. 32 or 37.

## ENGLISH LANGUAGE AND LITERATURE

*Professor and Head: MURPHY.*

*Eng. 1, 2. Composition and American Literature. (3, 3)*

Required of freshmen. Eng. 1 is the prerequisite of Eng. 2. (See also Eng. 21).

*Eng. 3, 4. Composition and World Literature. (3, 3)*

Prerequisite, Eng. 2 or 21. Eng. 3, 4 or Eng. 5, 6 or an acceptable combination of the two are required of sophomores. Credit will not be given for more than six hours of work in Eng. 3, 4 and 5, 6.

Eng. 5, 6. *Composition and English Literature.* (3, 3)

Prerequisite, Eng. 2 or 21. Eng. 3, 4 or Eng. 5, 6 or any acceptable combination of the two are required of sophomores. Credit will not be given for more than six hours of work in Eng. 3, 4 and 5, 6.

Eng. 21. *Advanced Freshman Composition and Literature.* (3)

Replaces the Eng. 1 and 2 requirements for students exempt from Eng. 1. (Students exempt from Eng. 1 will schedule another 3 credit course in English Language and Literature with a course number *higher* than Eng. 7).

## GOVERNMENT AND POLITICS

*Professor and Head:* PLISCHKE.

G. and P. 1. *American Government.* (3)

The basic course in government for the American Civilization Program. This course or its equivalent is prerequisite to all other courses in the Department of Government and Politics.

## HISTORY

*Professor and Head:* LAND.

H. 1, 2. *History of Modern Europe.* (3, 3)

Basic course prerequisite for all advanced courses in European History. H. 2 may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program.

H. 5, 6. *History of American Civilization.* (3, 3)

H. 51, 52. *The Humanities.* (3, 3)

Either of these courses may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program.

H. 56. *American Life and Thought.* (3)

Required of all students who qualify by examination for exemption from H. 5, 6. (Students who take H. 56 should refer to American Civilization Program for other requirements).

H. 105. *Social and Economic History of the United States to 1865.* (3)

Prerequisite, H. 5, 6 or the equivalent.

H. 106. *Social and Economic History of the United States since the Civil War.* (3)

Prerequisites, H. 5, 6 or the equivalent.

H. 129. *The United States and World Affairs.* (3)

Prerequisites, H. 5, 6 or the equivalent. (Usually offered in Summer School).

## INDUSTRIAL EDUCATION

*Professor and Head:* MALEY.

*Ind. Ed. 143. Industrial Safety Education I. (2)*

*Ind. Ed. 144. Industrial Safety Education II. (2)*

## MATHEMATICS

*Professor and Head:* COHEN.

*Math. 1. Introductory Algebra. (0)*

Recommended for students whose curriculum calls for Math. 18 and who failed the qualifying examination for this course. Special fee, \$30.

*Math. 18, 19. Elementary Mathematical Analysis. (5, 5)*

Prerequisites, high school algebra completed and solid geometry. (Students should pass qualifying examination for Math. 18 before enrolling in the course). (Usually offered in Summer School).

*Math. 20, 21 Calculus. (4, 4)*

Prerequisite, Math. 19 or equivalent. (Usually offered in Summer School).

*Math. 64. Differential Equations for Engineers. (3)*

Prerequisite, Math. 21 or equivalent. (Usually offered in Summer School).

*Math. 100. Higher Algebra. (3)*

Prerequisite, Math. 21 or equivalent.

*Math. 110, 111. Advanced Calculus. (3, 3)*

Prerequisite, Math. 21 or equivalent.

*Math. 116. Introduction to Complex Variable Theory. (3)*

Prerequisite, Math. 21 or equivalent.

*Math. 117. Fourier Series. (3)*

Prerequisite, Math. 114 Differential Equations (3) or equivalent.

*Math. 126, 127. Introduction to Differential Geometry and Tensor Analysis. (3, 3)*

Prerequisite, Math. 21 or equivalent.

*Math. 132. Mathematical Statistics. (3)*

Prerequisite, Math. 21 or equivalent.

*Math. 133. Advanced Statistical Analysis. (3)*

Prerequisite, Math. 132 or equivalent.



*Math. 150, 151. Advanced Mathematics for Engineers and Physicists. (3)*

Prerequisite, Math. 21 or equivalent.

*Math. 152. Vector Analysis. (3)*

Prerequisite, Math. 21 or equivalent.

*Math. 153. Operational Calculus. (3)*

Prerequisite, Math. 21 or equivalent.

*Math. 155. Numerical Analysis. (3)*

Prerequisite, Math. 110 and 114 or consent of instructor.

*Math. 156. Programming for High Speed Computers. (3)*

Prerequisite, Math. 21 or equivalent.

*Math. 160, 161. Analytic Mechanics. (3, 3)*

Prerequisite, Math. 21 or equivalent.

## MUSIC

*Professor and Head: ULRICH.*

*Music 20. Survey of Music Literature. (3)*

Course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program.

## PHILOSOPHY

*Professor and Head: GARVIN.*

*Phil. 1. Philosophy for Modern Man. (3)*

## PHYSICAL EDUCATION REQUIRED COURSES FOR MEN AND WOMEN

*Dean: LESTER M. FRALEY.*

All undergraduate men and women students classified as freshmen or sophomores who are registered for more than six semester hours of credit are required to enroll in and successfully complete four prescribed courses in physical education and/or athletics for a total of four semester hours of credit. These courses must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Men and women who have reached their thirtieth birthday are exempt from these courses. Transfer students who do not have credit in these courses, or their equivalent, must complete them or take them until graduation, whichever occurs first. Fees for all physical education courses are \$6.00 per semester.

## Other Course Offerings

### For Men Only

- P. E. 1. *Orientation to Physical Education.* (1)
- P. E. 3. *Developmental and Combative Sports.* (1)
- P. E. 5. *Team Sports and Aquatics.* (1)
- P. E. 7. *Recreational Activities.* (1)

### For Women Only

- P. E. 2. *Orientation Activities.* (1)
- P. E. 4. *Swimming.* (1)
- P. E. 6. *Dance.* (1)
- P. E. 8. *Sports.* (1)

## HEALTH EDUCATION REQUIRED COURSES FOR WOMEN

*Professor and Head:* DEACH.

All freshman women are required to complete one semester of Personal Health (Hea. 2) and one semester of Community Health (Hea. 4) for graduation. These courses must be taken in consecutive order with Hea. 2 taken first. Transfer students who do not have credit in these courses, or their equivalent, must complete them or take them until graduation, whichever comes first. Women who have reached their thirtieth birthday are exempt from these courses.

Hea. 2. *Personal Health.* (2)

Hea. 4. *Community Health.* (2)

## PHYSICS \*

*Professor and Head:* TOLL.

Phys. 20. *General Physics: Mechanics, Heat and Sound.* (5)

Math. 20 is to be taken concurrently (or previously). Lecture demonstration and laboratory fee, \$10.00.

Phys. 21. *General Physics: Electricity, Magnetism, and Optics.* (5)

Prerequisite, Phys. 20. Math. 21 is to be taken concurrently (or previously). Lecture demonstration and laboratory fee, \$10.00.

Phys. 53. *Nuclear Physics and Radioactivity.* (3)

Prerequisite, Phys. 11 or 21.

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\*See catalog of the College of Arts and Sciences for other physics courses of possible interest.

## PSYCHOLOGY

*Professor and Head:* ANDREWS.

*Psych. 1. Introduction to Psychology.* (3)

For students who qualify to select courses with Elective Group I of the American Civilization Program.

*Psych. 2. Applied Psychology.* (3)

Prerequisite, Psych. 1.

## SOCIOLOGY

*Professor and Head:* HOFFSOMMER.

*Soc. 1. Sociology of American Life.* (3)

A course within Elective Group I of the American Civilization Program.

*Soc. 5. Anthropology.* (3)

For students who qualify to select courses within Elective Group II of the American Civilization Program. (Usually offered in Summer School).

## SPEECH AND DRAMATIC ART

*Associate Professor and Head:* STRAUSBAUGH.

*Sp. 7. Public Speaking.* (2)

Laboratory fee, \$1.00.

# FACULTY

1960-1961

## COLLEGE OF ENGINEERING GLENN L. MARTIN INSTITUTE OF TECHNOLOGY

FREDERIC THEODORE MAVIS, *Dean*

RUSSELL BENNETT ALLEN, *Assistant Dean*

### *Department Heads*

JOHN LELAND BRYAN, *Head, Fire Protection Curriculum*

ROBERT CHARLES BYRUS, *Director, Fire Service Extension*

GEORGE FRANCIS CORCORAN, *Head, Department of Electrical Engineering*

DONALD SHAEFFER GROSS, *Director, Wind Tunnel Operations*

WILBERT JAMES HUFF, *Head, Department of Chemical Engineering*

CHARLES THOMAS GEORGE LOONEY, *Head, Department of Civil Engineering*

MONROE HARNISH MARTIN, *Director, Institute for Fluid Dynamics and Applied Mathematics*

SALVATORE D. NERBOSO, *Acting Librarian*

AARON WILEY SHERWOOD, *Head, Department of Aeronautical Engineering*

CHARLES ALFRED SHREEVE, JR., *Head, Department of Mechanical Engineering*

### *Staff in Residence*

REDFIELD WILMERTON ALLEN, *Associate Professor of Mechanical Engineering*  
B.S., University of Maryland, 1943; M.S., 1949; PH.D., University of Minnesota, 1959.

RUSSELL BENNETT ALLEN, *Assistant Dean of College of Engineering and Professor of Civil Engineering*  
B.S., Yale University, 1923; Registered Professional Engineer.

BRUNO EUGEN ASSMANN, *Research Associate, Institute for Fluid Dynamics and Applied Mathematics*  
DIPLOM INGENIEUR, Tech. University of Dresden, 1955.

EDWARD SEWELL BARBER, *Associate Professor of Civil Engineering*  
B.S., University of Maryland, 1935; C.E., 1952; Registered Professional Engineer.

NORMAN WILLIAM BAZLEY, *Research Assistant Professor, Institute for Fluid Dynamics and Applied Mathematics*

A.B., Brown University, 1954; PH.D., University of Maryland, 1959.

DONALD THEODORE BONNEY, *Professor of Chemical Engineering*

B.E., The Johns Hopkins University, 1926; PH.D., 1935; Registered Professional Engineer.

ALLEN ATVILL BOWERS, *Project Engineer, Wind Tunnel Operations*

B.S., University of Maryland, 1952.

JOHN LELAND BRYAN, *Professor and Head, Fire Protection Curriculum*

B.S., Oklahoma State University, 1953; M.S., 1954.

JOHANNES MARTINUS BURGERS, *Research Professor, Institute for Fluid Dynamics and Applied Mathematics*

DOCTOR OF MATHEMATICS AND PHYSICS, University of Leiden, 1918; DOCTOR HONORIS CAUSA, University Libre de Bruxelles, 1948; DOCTOR HONORIS CAUSA, University of Poitiers (France), 1950.

ROBERT CHARLES BYRUS, *Director, Fire Service Extension*

HAROLD DOTSON CATHER, *Assistant Professor of Mechanical Engineering*

B.S., West Virginia University, 1949; M.S., 1954.

GEORGE FRANCIS CORCORAN, *Professor of Electrical Engineering and Head of the Department*

B.S., South Dakota State College, 1923; M.S., University of Minnesota, 1925; Registered Professional Engineer.

GERALD CORNING, *Professor of Aeronautical Engineering*

B.S., New York University, 1937; M.S., The Catholic University of America, 1954.

JOHN BURTON COUNRYN, *Associate Professor of Civil Engineering*

B.S., University of Alabama, 1946; M.S., 1948; Registered Professional Engineer.

PIETER CORNELIS TOBIAS DEBOER, *Research Associate, Institute for Fluid Dynamics and Applied Mathematics*

Degree of Mechanical Engineering, Technological University, Delft, 1948.

JOAQUIN BASILIO DIAZ, *Research Professor, Institute for Fluid Dynamics and Applied Mathematics*

B.A., University of Texas, 1940; PH.D., Brown University, 1945.

DICK DUFFEY, *Professor of Chemical Engineering*

B.S., Purdue University, 1939; M.S., University of Iowa, 1940; PH.D., University of Maryland, 1956; Registered Professional Engineer.

RICHARD LONSDALE ELKINS, *Instructor in Mechanical Engineering*

B.S., University of Maryland, 1953; M.A., 1958.

ADDISON BERNARD EYLER, *Associate Professor of Mechanical Engineering*

B.S., University of Maryland, 1947; M.S., 1950.



## Faculty

DAVID WILLIAM FOX, *Assistant Research Professor, Institute for Fluid Dynamics and Applied Mathematics*

A.B., University of Michigan, 1951; M.S.E., 1952; PH.D., University of Maryland, 1958.

DANIEL LEADY GARBER, JR., *Instructor in Civil Engineering*

B.S., University of Maryland, 1952; M.S., 1959.

MELVIN D. GEORGE, *Research Associate, Institute for Fluid Dynamics and Applied Mathematics*

B.A., Northwestern University, 1956; PH.D., Princeton University, 1959.

WILLIAM WALTER GERKEN, *Instructor in Chemical Engineering*

B.S., Stevens Institute of Technology, 1953.

ROBERT MEADE GINNINGS, *Instructor in Electrical Engineering*

B.S., University of Maryland, 1958.

CARL WILLIAM GOHR, *Associate Professor of Civil Engineering*

B.S., Michigan State University, 1926; Registered Professional Engineer.

ALBERT GOMEZPLATA, *Assistant Professor of Chemical Engineering*

B.CH.E., Brooklyn Polytechnic Institute, 1952; M.CH.E., Rensselaer Polytechnic Institute, 1954; PH.D., 1958.

DONALD SHAEFFER GROSS, *Director, Wind Tunnel Operations*

B.S., University of Maryland, 1947.

WILLIAM ROBERT HAHN, JR., *Instructor in Electrical Engineering.*

B.S.E.E., George Washington University, 1958.

FRANCIS RYOSUKE HAMA, *Associate Research Professor, Institute for Fluid Dynamics and Applied Mathematics, and Lecturer in Aeronautical Engineering*

M.E., University of Tokyo, 1940; D.SC., 1952.

DENNIS PATRICK HANLEY, *Instructor in Mechanical Engineering*

B.S., University of Maryland, 1956; M.S., 1959.

CHARLES RAYMOND HAYLECK, JR., *Associate Professor of Mechanical Engineering*

B.S., University of Maryland, 1943; M.S., 1949.

DONALD CUMMINS HENNICK, *Assistant Professor of Mechanical Engineering*

B.S., University of Maryland, 1941.

URS ERWIN HOCHULI, *Assistant Professor of Electrical Engineering*

Dipl. Elektro-Techniker, Kantonales Technikum (Switzerland), 1950; M.S., University of Maryland, 1955.

LAWRENCE JUDSON HODGINS, *Associate Professor of Electrical Engineering*

B.S., Pennsylvania State University, 1914; Registered Professional Engineer.

WILBERT JAMES HUFF, *Professor of Chemical Engineering and Head of the Department; Director of the Engineering Experiment Station; Chairman, Division of Physical Sciences*

A.B., Ohio Northern University, 1911; A.B., Yale College, 1914; PH.D., Yale University, 1917; D.SC. (HON.), Ohio Northern University, 1927; Registered Professional Engineer.

JOHN WARREN JACKSON, *Professor of Mechanical Engineering*

B.S., University of Cincinnati, 1934; M.E., 1937; M.S., California Institute of Technology, 1940; Registered Professional Engineer.

JAMES EDWARD ALBERT JOHN, *Instructor in Mechanical Engineering*

B.S.E., Princeton University, 1955; M.S.E., 1957.

HAROLD CHESTER JONES, *Instructor in Electrical Engineering*

B.S., Illinois Institute of Technology, 1949.

RAYMOND JOHN KRIZEK, *Instructor in Civil Engineering*

B.E., The Johns Hopkins University, 1954.

HENRY ALBERT LEPPER, JR., *Professor of Civil Engineering*

B.S., IN C.E., The George Washington University, 1936; M.S., University of Illinois, 1938; D. ENG., Yale University, 1947; Registered Professional Engineer.

NELFORD PAGE LLOYD, *Instructor in Mechanical Engineering*

B.S., University of Maryland, 1950.

CHARLES THOMAS GEORGE LOONEY, *Professor of Civil Engineering and Head of the Department*

B.S., Carnegie Institute of Technology, 1932; M.S. IN C.E., University of Illinois, 1934; PH.D., 1940; Registered Professional Engineer.

GEOFFREY S. S. LUDFORD, *Visiting Professor of Aeronautical Engineering*

B.A., Cambridge University, 1948; M.A., 1952; PH.D., 1952.

ROBERT WILLIAM MADEY, *Instructor in Chemical Engineering*

B.S., Massachusetts Institute of Technology, 1955.

ALEXEI A. MARADUDIN, *Assistant Research Professor, Institute for Fluid Dynamics and Applied Mathematics*

B.S., Stanford University, 1953; M.S., 1954; PH.D., University of Bristol, 1957.

COLIN HERBERT MARKS, *Instructor in Mechanical Engineering*

B.S., IN M.E., Carnegie Institute of Technology, 1956; M.S., IN M.E., 1957.

MONROE HARNISH MARTIN, *Professor of Mathematics, and Director of the Institute for Fluid Dynamics and Applied Mathematics*

B.S., Lebanon Valley College, 1928; PH.D., The Johns Hopkins University, 1932; D.SC., Lebanon Valley College, 1958.

FREDERIC THEODORE MAVIS, *Dean of the College of Engineering and Professor of Civil Engineering*

B.S. IN C.E., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935; Registered Professional Engineer.

## Faculty

THOMAS GRASON MC WILLIAMS, JR., *Instructor in Chemical Engineering*  
B.ENG.SCI., The Johns Hopkins University, 1956.

ELLIOTT WATERS MONTROLL, *Research Professor, Institute for Fluid Dynamics and Applied Mathematics*  
B.S., University of Pittsburgh, 1937; PH.D., 1940.

WESLEY GRIGG MULLEN, *Instructor in Civil Engineering*  
B.S., Virginia Military Institute, 1949; M.S., University of Maryland, 1951.

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A.B., University of New Hampshire, 1941; A.M., George Washington University, 1944; B.S.L.S., Columbia University, 1947; A.M., Harvard University, 1948; PH.D., Harvard University, 1950.

ROBERT BENFIELD OETTING, *Instructor in Mechanical Engineering*  
B.S., IN M.E., Missouri School of Mines, 1955; M.S., IN A.E., Purdue University, 1957.

LOUIS ETHELBERG OTTS, JR., *Professor of Civil Engineering*  
B.A., East Texas Teachers College, 1933; B.S., Agricultural and Mechanical College of Texas, 1946; M.S., 1946; Registered Professional Engineer.

SHIH-I PAI, *Research Professor, Institute for Fluid Dynamics and Applied Mathematics, and Lecturer in Aeronautical Engineering*  
B.S., National Central University (China), 1935; M.S., Massachusetts Institute of Technology, 1938; PH.D., California Institute of Technology, 1940.

LAWRENCE EDWARD PAYNE, *Associate Research Professor, Institute for Fluid Dynamics and Applied Mathematics*  
B.S., Iowa State College, 1946; M.S., 1948; PH.D., 1950.

WILLIAM ALVIN PENNINGTON, *Professor of Chemical Engineering*  
B.S., Union University, 1925; PH.D., Iowa State College, 1933.

JEAN PHILIPPOT, *Research Associate, Institute for Fluid Dynamics and Applied Mathematics*  
B.S., Universite Libre de Bruxelles, 1950; B.SC., 1952; PH.D., 1959.

HARRY WILLIAM PIPER, *Assistant Professor of Civil Engineering*  
B.ARCH.E., Catholic University of America, 1940; Registered Professional Engineer.

ALLEN COMPERE PIPKIN, *Research Associate, Institute for Fluid Dynamics and Applied Mathematics*  
SC.B., Massachusetts Institute of Technology, 1952; PH.D., Brown University, 1959.

HENRY WILLIAMS PRICE, *Associate Professor of Electrical Engineering*  
B.S., University of Maryland, 1943; M.S., 1950.

MARY RUTH PRYOR, *Serials Librarian*  
B.A., Oxford University, 1952; M.A., 1956; Diploma in Librarianship, London University, 1957.

HENRY ROUSE REED, *Professor of Electrical Engineering*

B.S., University of Minnesota, 1925; M.S., 1927; E.E., South Dakota State College, 1930; PH.D., University of Iowa, 1941; Registered Professional Engineer.

FLAVIO BOTELHO REIS, *Fellow, Institute for Fluid Dynamics and Applied Mathematics*

CIVIL ENGR., Escola Nacional de Engenharia, 1934; S.M., Massachusetts Institute of Technology; PH.D., Massachusetts Institute of Technology.

MARCEL RIESZ, *Visiting Research Professor, Institute for Fluid Dynamics and Applied Mathematics*

PH.D., University of Budapest, 1908; HONORARY PH.D., University of Copenhagen, 1950.

ROBERT MATTHEW RIVELLO, *Associate Professor of Aeronautical Engineering*

B.S., University of Maryland, 1943; M.S., 1948; Registered Professional Engineer.

JAMES COLE ROBERTSON, *Senior Instructor, Fire Service Extension*

B.S., University of Southern California, 1954.

JEFFREY HAMILTON RUMBAUGH, *Instructor in Electrical Engineering*

B.S., University of Maryland, 1957.

GIOVANNI PIETRO RUTELLI, *Associate Professor of Electrical Engineering*

PH.D. (Physics), University of Palermo, 1923; PH.D. (Electrical Engineering), Polytechnic Institute of Turin, 1928.

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B.S., Duke University, 1947; M.S., Stevens Institute of Technology, 1950.

WILBURN CARROLL SCHROEDER, *Professor of Chemical Engineering*

B.S., University of Michigan, 1930; M.S., 1931; PH.D., 1933; Registered Professional Engineer.

WILLIAM STANLEY SEKSCIENSKI, *Project Engineer, Wind Tunnel Operations*

B.S., University of Maryland, 1955.

SHAN-FU SHEN, *Professor of Aeronautical Engineering*

B.S., National Central University (China), 1941; SC.D., Massachusetts Institute of Technology, 1949.

AARON WILEY SHERWOOD, *Professor of Aeronautical Engineering and Head of the Department*

M.E., Rensselaer Polytechnic Institute, 1935; M.S., University of Maryland, 1943; Registered Professional Engineer.

HEINY WILLY SHIPPLING, *Instructor in Mechanical Engineering*

B.S., California State Teachers College, Pennsylvania, 1952.

CHARLES ALFRED SHREEVE, JR., *Professor of Mechanical Engineering and Head of the Department*

B.E., The Johns Hopkins University, 1935; M.S., University of Maryland, 1943; Registered Professional Engineer.

## Faculty

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B.S., University of Maryland, 1949; M.S., 1951.
- ERIC HENRY SMALL, *Associate Professor of Electrical Engineering*  
B.S., New York University, 1938; M.E.E., 1945; Registered Professional Engineer.
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B.S., Harvard University, 1937; M.A., University of Maryland, 1940; PH.D., 1943.
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B.S., Carnegie Institute of Technology, 1948; M.S., 1948; SC.D., 1950.
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PH.D., Zurich, 1921; DOCTEUR ES SCIENCES, University of Paris, France, 1937.
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A.B., Columbia College, 1951; M.A., University of Maryland, 1953; PH.D., 1958.
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DIPL. ING., Hannover Institute of Technology, 1924; M.S., Harvard University, 1931; SC.D., 1934; Registered Professional Engineer.
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DIPLOM. IN PHYSICS, Technische Hochschule, Aachen, 1952; DR. RER. NAT., 1954.



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B.S., University of Maryland, 1950.

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B.S., Duke University, 1952; M.S., University of Maryland, 1955; PH.D., 1959.

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B.S., Technische Hogeschool te Delft, Holland, 1954; PH.D., 1958.

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B.S., University of Maryland, 1949; M. ED., 1952.

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B.S., University of Michigan, 1941; M.S., 1947; PH.D., 1953.

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B.S., Iowa State College, 1943; Registered Professional Engineer.

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B.S., Chiao-Tung University, China, 1942; M.S., Massachusetts Institute of Technology, 1945; SC.D., 1953.

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B.S., College of William and Mary, 1933; M.A., Columbia University, 1935; PH.D., Catholic University of America, 1949.

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B.M.E., Cooper Union, 1949; M.S., University of Maryland, 1952; PH.D., 1956.

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B.S., University of Texas, 1941; M.S., University of Maryland, 1949.

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B.S.E. (E.E.), University of Michigan, 1928; B.S.E., (MATH.), 1929; M.S.E. (E.E.), 1929.

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B.S., Georgia Institute of Technology, 1948; M.S., 1949; PH.D., University of Virginia, 1952.

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PH.D., University of Leipzig (Germany), 1933.

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B.S., The Johns Hopkins University, 1938; D.E., 1941.

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B.S., Nebraska State Teachers College, 1928; M.S., University of Nebraska, 1930; PH.D., 1933.

## Faculty

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S.B., Massachusetts Institute of Technology, 1937; sc.D., 1940; M.A., The George Washington University, 1945.
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B.A., Lehigh University, 1946; M.S.E., The Johns Hopkins University, 1952.
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B.S.E.E., Illinois Institute of Technology, 1943; M.S., University of Maryland, 1948.
- EARL ADOLPH SCHUCHARD, *Lecturer and Adviser in Electrical Engineering*  
B.S., University of Washington, 1933; M.S., 1934; PH.D., 1940.
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B.E.E., City College of New York, 1944; M.S., University of Maryland, 1951.
- ARNOLD ELLIOTT SEIGEL, *Lecturer in Aeronautical Engineering*  
B.S., University of Maryland, 1944; M.S., Massachusetts Institute of Technology, 1947; PH.D., University of Amsterdam (Holland), 1952.
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B.A., Bera College, 1928; M.S., Indiana University, 1929; PH.D., Indiana University, 1934.
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B.S. IN E.E., University of Pennsylvania, 1928; A.M., 1930; PH.D., Princeton University, 1934.
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B.S., University of Illinois, 1917; Registered Professional Engineer.
- WILLIAM EDWARDS WATTERS, JR., *Lecturer in Electrical Engineering*  
B.S., University of Kentucky, 1947; M.S., 1949; PH.D., University of Maryland, 1957.
- ROBERT ELMER WILSON, *Lecturer in Aeronautical Engineering*  
B.S., Georgia Institute of Technology, 1941; M.S., 1942; PH.D., University of Texas, 1952.





COLLEGE  
of  
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Catalog Series 1960-1961



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# UNIVERSITY CALENDAR

## FALL SEMESTER 1959

### JANUARY 1960

- 4 Monday—Christmas Recess Ends 8 a.m.
- 20 Wednesday—Pre-Examination Study Day
- 21-27 Thursday to Wednesday, inclusive—Fall Semester Examinations

## SPRING SEMESTER 1960

### FEBRUARY

- 1-5 Monday to Friday—Spring Semester Registration
- 8 Monday—Instruction Begins
- 22 Monday—Washington's Birthday Holiday

### MARCH

- 25 Friday—Maryland Day

### APRIL

- 14 Thursday—Easter Recess Begins After Last Class
- 19 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 18 Wednesday—Military Day
- 26 Thursday—Pre-Examination Study Day
- May 27- } Friday to Friday, inclusive—Spring Semester Examinations
- June 3 }
- 29 Sunday—Baccalaureate Exercises
- 30 Monday—Memorial Day, Holiday

### JUNE

- 4 Saturday—Commencement Exercises

## SUMMER SESSION 1960

### JUNE 1960

- 27 Monday—Summer Session Registration
- 28 Tuesday—Summer Session Begins

### AUGUST

- 5 Friday—Summer Session Ends

## SHORT COURSES 1960

### JUNE 1960

- 20-25 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 8-13 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 6-9 Tuesday to Friday—Firemen's Short Course

# UNIVERSITY CALENDAR

## FALL SEMESTER 1960

### SEPTEMBER

- 12-16 Monday to Friday—Fall Semester Registration
- 19 Monday—Instruction Begins

### NOVEMBER

- 23 Wednesday—Thanksgiving Recess Begins After Last Class
- 28 Monday—Thanksgiving Recess Ends 8 a.m.

### DECEMBER

- 20 Tuesday—Christmas Recess Begins

### JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day Holiday
- 25 Wednesday—Pre-Examination Study Day
- Jan. 26- } Thursday to Wednesday, inclusive—Fall Semester Examinations
- Feb. 1 }

## SPRING SEMESTER 1961

### FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday Holiday

### MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

### APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 17 Wednesday—Military Day
- 30 Tuesday—Memorial Day, Holiday

### JUNE

- 2 Friday—Pre-Examination Study Day
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 4 Sunday—Baccalaureate Exercises
- 10 Saturday—Commencement Exercises

## SUMMER SESSION 1961

### JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

### AUGUST

- 4 Friday—Summer Session Ends

## SHORT COURSES 1961

### JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 7-12 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

# BOARD OF REGENTS

## and

### MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK <i>Chairman</i> .....	1966
McCormick and Company, 414 Light Street, Baltimore 2	
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HARRY H. NUTTLE <i>Treasurer</i> .....	1966
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LOUIS L. KAPLAN <i>Assistant Secretary</i> .....	1961
5800 Park Heights Avenue, Baltimore 15	
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Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.



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B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936;  
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B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBACE, *Dean of the Faculty*

B.S., State Teachers College, California, Pa., 1934; M.A., Ohio State University, 1936;  
PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

## *Emeritus*

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B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

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D.D.S., University of Maryland, 1922.

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B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

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B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

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PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*  
B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940;  
ED.D., University of Maryland, 1952.

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R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University  
of Denver, 1942; M.B.A. in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agricultural Experiment Station and Head, Department  
of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D.,  
University of Maryland, 1933.

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B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland,  
1917.

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B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale Uni-  
versity, 1917; D.SC. (HON.), Ohio Northern University, 1927.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945;  
PH.D., Pennsylvania State University, 1953.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

PAUL E. NYSTROM, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A.,  
Harvard University, 1948; D.P.A., 1951.

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PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

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Diplome le l'Institut de Touraine, 1932.

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B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929;  
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Air Science*

B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania, 1949.

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B.A., University of Massachusetts, 1941.

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B.S., University of Maryland, 1927; E.E., 1931.

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B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S. Columbia University, 1940.

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## COMMITTEE ON STUDENT EMPLOYMENT AND SELF-HELP

Dr. Warren R. Johnson (Physical Education), *Chairman*

## COMMITTEE ON INTERCOLLEGIATE COMPETITION

Dr. Clyne S. Shaffner (Agriculture), *Chairman*

## COMMITTEE ON PROFESSIONAL ETHICS, ACADEMIC FREEDOM AND TENURE

Dr. Peter Lejins (Arts and Sciences), *Chairman*

## COMMITTEE ON APPOINTMENTS, PROMOTIONS AND SALARIES

Dr. William E. Bickley (Agriculture), *Chairman*

## COMMITTEE ON FACULTY LIFE AND WELFARE

Dr. Guy B. Hathorn (Business and Public Administration), *Chairman*

## COMMITTEE ON MEMBERSHIP AND REPRESENTATION

Dr. Joseph C. Biddix (Dentistry), *Chairman*

## THE COLLEGE

THE COLLEGE OF HOME ECONOMICS SERVES MARYLAND AND THE SURROUNDING area with its program for the education of young women and men interested in social, economic, scientific, and aesthetic aspects of homemaking and of family living in relation to the community. The educational offerings of the College are planned to help students function effectively and creatively as individuals, as family members, and as responsible citizens; to prepare them for positions for which home economics is a major or minor preparation; and to promote an appreciation and utilization of the findings of research. The College is concerned with contributing to the education for home and family life of women and men enrolled in other schools and colleges as well as those majoring in home economics.

The College of Home Economics is organized into the Departments of Food, Nutrition, and Institution Management; Home Management; Practical Art and Crafts; and Textiles and Clothing. The curricula offered are: general home economics; applied art (merchandising, advertising, crafts, costume and interior design); food and nutrition and related science; home economics education; home economics extension; home management; institution management; textiles and clothing; and textiles and related science.

The over-all function of home economics is to integrate the contributions of the physical and biological sciences, the social sciences, psychology, philosophy, and art in the treatment of all phases of home and family life, to the end that they are used by families in all parts of society and by the agencies serving families.

### General Information

Detailed information concerning fees and expenses, scholarships and awards, student life, and other material of a general nature, may be found in the University publication titled *An Adventure in Learning*. This publication may be obtained on request from the Office of University Relations, North Administration Building, University of Maryland at College Park. A detailed explanation of the regulations of student and academic life, may be found in the University publication titled, *University General and Academic Regulations*. This is mailed in September of each year to all undergraduate students, and again in February to all new undergraduate students not previously enrolled in the preceding fall semester.

Requests for course catalogs for the individual schools and colleges should be directed to the deans of these respective units, addressed to:

#### COLLEGES LOCATED AT COLLEGE PARK:

Dean

(College in which you are interested)

The University of Maryland

College Park, Maryland



## *Special Facilities, Honors and Awards*

### PROFESSIONAL SCHOOLS LOCATED AT BALTIMORE:

Dean

(School in which you are interested)

The University of Maryland

Lombard and Greene Streets

Baltimore 1, Maryland

## Special Facilities and Activities

### PHYSICAL FACILITIES

The home of the College of Home Economics, following campus tradition, is a colonial brick building planned and built to present modern equipment and facilities for education in home economics. A home management house is maintained on the campus for resident experience in management activities of family life.

Located, as the campus is, between two large cities, unusual opportunities are provided for both faculty and students. In addition to the University's general and specialized libraries, Baltimore and Washington furnish added library facilities. The art galleries and museums, the government bureaus and city institutions stimulate study and provide enriching experiences for the home economics student.

### SOCIETIES

Home Economics Club: Membership is open to all home economics students. The Club is affiliated with the American Home Economics Association.

Omicron Nu, national home economics honor society: Students of high scholarship are eligible for election to membership.

## Honors and Awards, Scholarships and Loan Fund

The Danforth Foundation and the Ralston Purina Company Summer Fellowships: One of four weeks to an outstanding junior; one of two weeks to an outstanding freshman.

Borden Home Economics Scholarship Award: Three hundred dollars is given by the Borden Company to the Home Economics student, who, upon entering her senior year, has completed two or more courses in foods and nutrition and has the highest scholastic standing of eligible students.

Omicron Nu Scholarship Award: Omicron Nu presents annually an award to the freshman in the College of Home Economics who attains the highest scholastic average during the first semester.

Sears Roebuck Scholarships: The Sears Roebuck Foundation has made available to freshmen in the College of Home Economics four scholarships of one hundred dollars each.

**M. Marie Mount Memorial Scholarship:** Two hundred fifty dollars is awarded each year to a junior or senior student who shows outstanding potential as a professional home economist.

**Washington Stewards and Caterers Scholarships:** The Washington Stewards and Caterers Association has made available two \$250 scholarships to juniors or seniors who are preparing for a career as food manager or dietitian.

**Venia M. Kellar Grant:** A grant of \$100 is open to a Maryland student of promise who wishes to enroll in the College of Home Economics.

A loan fund, composed of contributions by the District of Columbia Home Economics Association, Maryland Chapter of Omicron Nu, and personal gifts, is available for students majoring in home economics.

**Home Economics Senior Award:** The Home Economics alumni annually present an award to the senior student who is outstanding in her application of the spirit and principles of home economics in her present living and who best shows promise of carrying these into her future home and community.

For other scholarships and awards, see *An Adventure in Learning*.

## Academic Information

### ADMISSION

All students desiring to enroll in the College of Home Economics must apply to the Director of Admissions of the University of Maryland at College Park.

In selecting students emphasis will be placed upon good marks and other indications of probable success in college as well as upon the pattern of subjects pursued in high school. In general, 4 units of English and 1 unit each of social and natural sciences, algebra and plane geometry are required. While foreign language is desirable for certain programs no foreign language is required for entrance.

### COSTS

Actual annual costs of attending the University include \$185.00 fixed charges; \$101.00 special fees; \$400.00 board; \$170.00 to \$200.00 lodging for Maryland residents, or \$220.00 to \$250.00 for residents of other states and countries. A charge of \$300.00 is assessed students not residents of the State of Maryland. A matriculation fee of \$10.00 is charged all new students. A fee of \$10.00 must accompany a prospective student's application for admission. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the application fee.

Complete information regarding costs is available in the publication, *An Adventure in Learning*.

## Academic Information

Senior students enrolled in Home Mgt. 152 are considered resident students and will be charged room rent at the same rate as the women's residence hall. Students living off-campus will be charged room rent for the five-week period of home management residence.

### DEGREES

The degree of Bachelor of Science is conferred for the satisfactory completion with an average of "C" or better, of a prescribed curriculum of 120 academic semester hour credits. This is exclusive of 4 credits in hygiene and 4 in physical activities for women—a total of 128 credits, and exclusive of 8 credits in Basic Air Science and 4 in physical activities for men—a total of 136 credits. No grade below a "C" is acceptable in courses within the field chosen as a major.

The Master of Science degree is offered in food, in nutrition and in textiles and clothing in the College of Home Economics and in home economics education in the College of Education. (See the Graduate School Announcements.)

### AIR SCIENCE INSTRUCTION

All male students, unless specifically exempted under University rules, are required to take Basic Air Science training for a period of two years. The successful completion of this course is a prerequisite for graduation, but it must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Transfer students who do not have the required two years of air science training will be required to complete the course or take it until graduation, whichever occurs first.

Selected students who wish to do so may carry Advanced Air Science courses during their junior and senior years which may lead to a regular or reserve commission in the United States Air Force.

For further details concerning the requirements in military instruction, write the Editor of Publications for a copy of *An Adventure in Learning*.

### THE STUDENT LOAD

The student load in the College of Home Economics varies from 15-18 credits. A student wishing to carry more than 18 credits must have a "B" grade average and permission of the Dean.

### CURRICULA\*

A student may elect one of the following curricula, or a combination of curricula: food nutrition or institution management (food service), general

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\*In order to meet the particular need of a student, certain adjustments in these requirements may be made with the approval of the student's adviser and Dean.

home economics, home economics education, home economics extension, practical art or crafts, and textiles or textiles and clothing. A student who wishes to teach home economics may register in home economics education in the College of Home Economics or in the College of Education. (See Home Economics Education.)

#### AMERICAN CIVILIZATION PROGRAM

The University considers it important for every student to achieve an appreciative understanding of this country, its history and its culture. It has therefore established a comprehensive program in American civilization designed to provide the student with this general educational background. (See *University General and Academic Regulations*.)

All students receiving a baccalaureate degree from the University of Maryland must (except as specific exceptions are noted in printed curricula) obtain 24 semester hours of credit in the lower division courses of the American Civilization Program. Although the courses in the program are prescribed generally, some choice is permitted, especially for students who demonstrate in classification tests good previous preparation in one or more of the required subjects.

Through such testing a student may be released from 3 hours of English, 3 hours of American history, and 3 hours of American government, leaving 9 hours of English and 3 hours of American history as absolute requirements. Students released from 3 hours of English will take Eng. 21 instead of Eng. 1 and 2. Those released from 3 hours in history will take H. 56 instead of H. 5 and 6.

The following courses required of all home economics majors may apply to the American Civilization Program: Econ. 37, Soc. 1, and Psych. 1.

## CURRICULA AND REQUIRED COURSES

Students in all curricula follow similar programs during the freshman year. It is advisable for a student to choose a curriculum at the beginning of the sophomore year, as he is often at a disadvantage if a change is made later. Before continuing with the third year of any curriculum, a student must have attained junior standing: 56 academic credits with a "C" grade average. (See *University General and Academic Regulations*, Junior Standing.)

Faculty advisers assist the students to develop a wise arrangement of studies in their chosen fields, and further, urges them to acquire practical experience therein before graduation.

<i>Freshman Year*</i>	Semester	
	I	II
Eng. 1, 2—Composition and American Literature <sup>1</sup> .....	3	3
Soc. 1—Sociology of American Life.....	(3)	3
G. & P. 1—American Government <sup>1</sup> .....	3	(3)
Sp. 7—Public Speaking .....	2	(2)
H. E. 1—Home Economics Orientation <sup>2</sup> .....	0	..
Tex. 1—Textiles .....	(3)	3
Pr. Art 1—Design.....	3	(3)
Hea. 2—Personal Health (women).....	2	..
Hea. 4—Community Health (women).....	..	2
A. S. 1, 2—Basic Air Science (for men students) .....	(2)	(2)
Physical Activities .....	1	1
Chem. 11, 13—General Chemistry, Science, or Elective <sup>3</sup> .....	3	3
Total.....	17	17

### FOOD, NUTRITION, AND INSTITUTION MANAGEMENT

The Department offers the opportunity for the election of one of three curricula, food or nutrition or institution management.

Graduates of the food and nutrition curriculum find positions in the consumer education departments of a wide variety of food and equipment industries, magazines and advertising firms, doing testing, editorial or promotion work. They may become nutritionists with industry or in state or community programs. The curriculum also prepares students for graduate study, research, or work as laboratory technicians.

\*See individual curricula for variations.

<sup>1</sup> See information on page 5 concerning the American Civilization Program.

<sup>2</sup> Not required of men students.

<sup>3</sup> For practical art, crafts, and textiles and clothing majors, science credits totaling 4 semester hours may be selected from the following: Bot. 1—General Botany (4); Chem. 1, 3—General Chemistry (4, 4); Chem. 11, 13—General Chemistry (3, 3); Ent. 1—Introductory Entomology (3); Geog. 1, 2—Economic Resources (2, 2); Phys. 1, 2—Elements of Physics (3, 3); Soc. 5—Anthropology (3). For all other curricula, chemistry is required.



The institution management curriculum prepares students for food service administration in such institutions as hospitals, colleges and school lunch rooms; in commercial organizations: restaurants, inns, hotels, and industrial food service. Institution management majors meet the academic requirements for entrance to a dietetic internship approved by the American Dietetic Association. Students following this major are required to have, before the senior year, work experience in food service. This experience must be satisfactory in length of time, type and quality of work.

Men specializing in either the food and nutrition or institution management major will be allowed substitutions for certain required courses.

**FOOD AND NUTRITION CURRICULUM**

	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or .....	3	3
Eng. 5, 6—Composition and English Literature .....	(3)	(3)
Chem. 31, 32, 33, 34—Organic Chemistry .....	3	3
Foods 52, 53—Science of Food Preparation .....	3	3
Zool. 1—General Zoology .....	4	..
Psych. 1—Introduction to Psychology.....	3	(3)
Econ. 37—Fundamentals of Economics.....	(3)	3
Microb. 51—Household Microbiology .....	..	3
Physical Activities .....	1	1
A. S. 3, 4—Basic Air Science (for men students) .....	(2)	(2)
Total .....	19	18
<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home .....	3	3
Foods 100—Food Economics .....	2	..
Foods 101—Meal Management .....	..	2
Nut. 110—Nutrition .....	3	..
Nut. 112—Dietetics <sup>1</sup> .....	..	3
Chem. 81, 82—General Bio-Chemistry .....	4	..
C. Ed. 110—Child Development .....	..	3
H. 5, 6—History of American Civilization <sup>2</sup> .....	3	3
Pr. Art 2—Survey of Art History .....	2	..
Elective .....	..	3
Total .....	17	17
<i>Senior Year</i>		
Nut. 120—Advanced Nutrition .....	..	3
Home Mgt. 152—Experience in Management of the Home....	..	3
Foods 102—Experimental Foods .....	..	3
H. E. 103—Demonstrations .....	(2)	2
Foods 104—Advanced Foods .....	2-3	..
Elective .....	12-13	3
Total .....	15	14

<sup>1</sup> Food majors take Foods 105, Foods of Other Countries.

<sup>2</sup> See information on page 5 concerning the American Civilization Program.

## General Home Economics Curriculum

### INSTITUTION MANAGEMENT CURRICULUM

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or .....	3	3
Eng. 5, 6—Composition and English Literature .....	(3)	(3)
Chem. 31, 32, 33, 34—Organic Chemistry .....	3	3
Foods 52, 53—Science of Food Preparation .....	3	3
Econ. 37—Fundamentals of Economics .....	..	3
Pr. Art 2—Survey of Art History .....	2	..
Psych. 1—Introduction to Psychology .....	3	..
Microb. 51—Household Microbiology .....	..	3
A. S. 3, 4—Basic Air Science (for men students) .....	(2)	(2)
Physical Activities .....	1	1
Total .....	15	16
<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home .....	3	3
Nut. 110—Nutrition .....	3	..
Nut. 112—Dietetics .....	..	3
Chem. 81, 82—General Bio-Chemistry .....	4	..
Inst. Mgt. 160—Institution Organization and Management....	3	..
Inst. Mgt. 161—Institution Purchasing and Accounting .....	..	3
C. Ed. 110—Child Development III.....	..	3
Nut. 113—Diet and Disease <sup>1</sup> .....	..	2
Inst. Mgt. 162—Institution Foods .....	..	3
Zool. 1—General Zoology .....	4	..
Total.....	17	17
<i>Senior Year</i>		
H. 5, 6—History of American Civilization <sup>2</sup> .....	3	3
Home Mgt. 152—Experience in Management of the Home....	3	..
Nut. 120—Advanced Nutrition .....	..	3
Foods 104—Advanced Foods .....	2	..
Psych. 110—Educational Psychology.....	..	3
Foods 102—Experimental Foods .....	..	3
Inst. Mgt. 164—Advanced Institution Management .....	..	2
Electives .....	4	4
Total .....	15	15

### GENERAL HOME ECONOMICS

The general home economics curriculum is planned to give students a good basis for personal development, for education in family living, and for job

<sup>1</sup>A student planning to do institutional work other than hospital dietetics is not required to take Nut. 113, Diet and Disease.

<sup>2</sup>See information on page 5 concerning the American Civilization Program.

opportunities requiring a general knowledge of the various areas of home economics. Electives are adequate for further developing a special ability or interest within the areas of home economics or within other colleges, such as: music, social science, radio, journalism, education.

	Semester	
	I	II
<i>Sophomore Year*</i>		
Eng. 3, 4—Composition and World Literature or .....	3	3
Eng. 5, 6—Composition and English Literature .....	(3)	(3)
Chem. 31, 32, 33, 34—Organic Chemistry .....	3	3
Foods 52, 53—Science of Food Preparation .....	3	3
Econ. 37—Fundamentals of Economics .....	3	..
Microb. 51—Household Microbiology .....	..	3
Clo. 20—Clothing Construction .....	3	..
Pr. Art 20—Costume Design .....	..	3
Physical Activities .....	1	1
A. S. 3, 4—Basic Air Science (for men students) .....	(2)	(2)
Electives .....	(3)	(3)
Total .....	16	16

<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home .....	3	3
Nut. 110—Nutrition or .....	3	..
Nut. 10—Elements of Nutrition .....	(3)	..
Pr. Art 2—Survey of Art History .....	2	..
Pr. Art 40, 41—Interior Design .....	1	3
Clo. 22—Clothing Construction or Clo. 21, Pattern Design....	..	2-(3)
Foods 100—Food Economics .....	2	..
Foods 101—Meal Management .....	..	2
Zool. 1—General Zoology .....	4	..
Psych. 1—Introduction to Psychology .....	..	3
Elective .....	3	3
Total .....	18	16-(17)

<i>Senior Year</i>		
C. Ed. 110—Child Development III. ....	3	..
H. 5, 6—History of American Civilization <sup>1</sup> . ....	3	3
Home Mgt. 152—Experience in Management of the Home ...	..	3
Electives .....	(8)-9	9
Total .....	(14)-15	15

## HOME ECONOMICS EXTENSION

This curriculum provides training for home demonstration work. It includes the basic sciences and the technical subjects related to farm, home and community situations that home demonstration agents encounter. It provides

\*Chem. 31, 32, 33, 34 recommended as an elective for students with special interest in and need for Food and Nutrition.

<sup>1</sup>See information on page 5 concerning the American Civilization Program.

## Home Economics Extension Curriculum

an opportunity to gain insight and understanding into the attitudes and appreciations expected of a professional extension worker.\*

	—Semester—	
	I	II
<b>Sophomore Year</b>		
Eng. 3, 4—Composition and World Literature or .....	3	3
Eng. 5, 6—Composition and English Literature .....	(3)	(3)
Chem. 31, 32, 33, 34—Organic Chemistry <sup>2</sup> .....	3	3
Foods 52, 53—Science of Food Preparation .....	3	3
Econ. 37—Fundamentals of Economics .....	3	..
Clo. 20—Clothing Construction .....	3	..
Psych. 1—Introduction to Psychology .....	..	3
Clo. 21—Pattern Design .....	..	3
Physical Activities .....	1	1
Total .....	16	16
<b>Junior Year</b>		
Home Mgt. 150, 151—Management of the Home .....	3	3
R. Ed. 160—Agricultural Information Methods .....	2	..
Nut. 110—Nutrition .....	3	..
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
H. D. Ed. 100, 101—Principles of Human Development I and II .....	3	3
Nut. 112—Dietetics .....	..	3
R. Ed. 150—Extension Education .....	..	2
Zool. 1—General Zoology .....	4	..
Microb. 51—Household Microbiology .....	..	3
Total .....	18	17
<b>Senior Year</b>		
Home Mgt. 152—Experience in Management of the Home ..	3	..
H. E. 103—Demonstrations .....	(2)	2
Pr. Art 2—Survey of Art History .....	..	2
Soc. 113—The Rural Community .....	..	3
Pr. Art elective (Pr. Art or Crafts course) .....	(2)-3	..
Clo. 128—Home Furnishings .....	..	3
H. E. Ed. 102—Problems in Teaching Home Economics....	3	..
Foods 100—Food Economics .....	2	..
Foods 101—Meal Management .....	2	..
Electives .....	2	4-(5)
Total .....	(14)-15	14-(15)

\*Experience in the field of home economics extension is encouraged for all students majoring in this curriculum. Such experience should be gained before the completion of the senior year.

<sup>1</sup> See information on page 5 concerning the American Civilization Program.

<sup>2</sup> Chem. 31, 32, 33, 34 recommended for students with special interest in and need for Food and Nutrition.

## PRACTICAL ART AND CRAFTS

## PRACTICAL ART

This curriculum permits a choice of three fields of concentration: art in advertising design, interior design, costume design. Emphasis is given to the selection of wearing apparel and house furnishings with relation to personality and to family living. Positions available to graduates include designing, promotion, selling or buying of wearing apparel or house furnishings or both.

*Freshman Year*

Pr. Art 2—Survey of Art History (2) and O. T. 1—Principles of Typewriting (2) are required subjects for the freshman year. O. T. 1 is not required of students who have completed one full year of typing in high school.

*Sophomore Year*

	<i>(Semester—)</i>	
	<i>I</i>	<i>II</i>
Eng. 3, 4—Composition and World Literature or .....	3	3
Eng. 5, 6—Composition and English Literature .....	(3)	(3)
Econ. 37—Fundamentals of Economics .....	3	..
Psych. 1—Introduction to Psychology .....	..	3
Foods 1—Introductory Foods .....	3	..
Pr. Art 20—Costume Design .....	3	..
Pr. Art 21—Action Drawing .....	..	2
Pr. Art 30—Typography and Lettering .....	3	..
Pr. Art 40, 41—Interior Design .....	1	3
Laboratory Science .....	..	4
Physical Activities .....	1	1
Total .....	17	16

*Junior Year*

Home Mgt. 150, 151—Management of the Home .....	3	3
Foods 101—Meal Management .....	2	..
Nut. 10—Elements of Nutrition .....	..	3
B. A. 150a—Marketing Principles and Organization <sup>1</sup> .....	3	..
B. A. 154—Retail Store Management <sup>1</sup> .....	3	..
Pr. Art 38—Photography <sup>1</sup> .....	2	..
Pr. Art 120, 121—Costume Illustration, or .....	2	2
Pr. Art 142, 143—Advanced Interior Design .....	(2)	(2)

<sup>1</sup> Women students who desire a non-business program may substitute one of the following programs for the 18 credits in these courses: 12 semester hours of French, German, or Spanish plus one of the following groups of courses: I—Soc. 5—Anthropology (3); Eng. 12—Introduction to Creative Writing (2); Eng. 170—Creative Writing (2) or Speech 117—Radio Continuity Writing (3). II—Journ. 10, 11—News Reporting (6); Journ. 165—Feature Writing (3). III—Art 5—Still-life (3); Art 104—Life Class (3); Art 113—Illustration (3). IV—Soc. 5—Anthropology (3), H. 51, 52—The Humanities (6) or Art 9, 11—Historical Survey of Painting, Sculpture, and Architecture (6). With any of these variations of the Practical Art curriculum, the student is responsible for being able to schedule her full program of courses. The above curriculum variations are not open to men students as their program is sufficiently flexible.



	Semester	
	I	II
Junior Year (Continued)		
One group of the following:.....	3	3
Advertising: Cr. 3—Creative Art Inspired by Primitive Art (2)		
Pr. Art 4—Three-dimensional Design (2)		
Pr. Art 3—Silk Screen Printing (2)		
Costume: Clo. 120—Draping (3)		
Tex. 105—Consumer Problems in Textiles (3)		
Interior: Tex. 106—Household Textiles (3)		
Clo. 128—Home Furnishings (3)		
Elective .....	..	3
Total .....	18	14

Senior Year

H. 5, 6—History of American Civilization <sup>2</sup> .....	3	3
Home Mgt. 152—Experience in Management of the Home....	(3)	3
C. Ed. 110—Child Development III.....	(3)	3
Speech 115—Radio in Retailing <sup>1</sup> .....	3	..
B. A. 155—Problems in Retail Merchandising <sup>1</sup> .....	..	3
Pr. Art 132—Advertising Layout .....	2	(2)
Pr. Art 136—Display .....	2	(2)
Individual Problems in Advertising Costume, or Interior....	2	2
Electives .....	3	2
Total.....	15	16

PRACTICAL ART (FOR MEN)

Requirements are the same as for women, with the following modifications:

*Additions:* A.S. 1, 2, 3, 4; 15 hours in art in merchandising, merchandising, and creative writing to be selected in consultation with the student's adviser.

*Omissions:*<sup>3</sup> H. E. 1, Foods 1, 101; Home Mgt. 150, 151, 152, Hea. 2, 4.

<sup>1</sup>Women students who desire a non-business program may substitute one of the following programs for the 18 credits in these courses: 12 semester hours of French, German, or Spanish plus one of the following groups of courses: I—Soc. 5—Anthropology (3); Eng. 12—Introduction to Creative Writing (2); Eng. 170—Creative Writing (2) or Speech 117—Radio Continuity Writing (3). II—Journ. 10, 11—News Reporting (6); Journ. 165—Feature Writing (3). III—Art 5—Still-life (3); Art 104—Life Class (3); Art 113—Illustration (3). IV—Soc. 5—Anthropology (3), H. 51, 52—The Humanities (6) or Art 9, 11—Historical Survey of Painting, Sculpture, and Architecture (6). With any of these variations of the Practical Art curriculum, the student is responsible for being able to schedule her full program of courses. The above curriculum variations are not open to men students as their program is sufficiently flexible.

<sup>2</sup>See information on page 5 concerning the American Civilization Program.

<sup>3</sup>Required courses which have been omitted may be taken as electives.

## CRAFTS

This curriculum permits a choice of two vocational areas: pre-occupational therapy and teaching. Emphasis is given to the joy of creation through crafts with good design being stressed.

*Freshman Year*

Pr. Art 2—Survey of Art History (2) is a required subject of the freshman year.

	Semester	
	I	I
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature .....	3	3
Foods 1—Introductory Foods .....	3	..
Econ. 37—Fundamentals of Economics .....	3	..
Psych. 1—Introduction to Psychology .....	..	3
Pr. Art 3—Silk Screen Printing .....	..	2
Pr. Art 4—Three-dimensional Design .....	2	..
Cr. 2—Simple Crafts .....	2	..
Cr. 3—Creative Art Inspired by Primitive Art .....	2	..
Cr. 20, 21—Ceramics .....	2	2
Laboratory Science (see below, Pre-occupational Therapy) ..	..	4
Physical Activities .....	1	1
Electives <sup>1</sup> .....	..	3
Total .....	18	18
<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home .....	3	3
H. 5, 6—History of American Civilization <sup>2</sup> .....	3	3
Nut. 10—Elements of Nutrition .....	..	3
Cr. 30, 31—Metalry .....	2	2
Cr. 40, 41—Weaving .....	2	2
Ind. Ed. 9—Industrial Arts in the Elementary School .....	2	..
Ind. Ed. 2—Elementary Woodworking .....	..	2
Electives <sup>1</sup> .....	4	2
Total .....	16	17
<i>Senior Year</i>		
Pr. Art 38—Photography .....	2	..
Cr. 5—Puppetry .....	..	3
Advanced Crafts .....	4	2
Electives <sup>1</sup> .....	7	9
Total .....	13	14

<sup>1</sup>One of the two following programs to be completed in addition to the above specified subjects: I—Pre-Occupational Therapy: Zool. 1—General Zoology (4); Zool. 14, 15—Human Anatomy and Physiology (4, 4); Phys. 1—Elements of Physics (3); P. E. 100—Scientific Bases of Movement (4); Psych. 5—Mental Hygiene (3); Art 7—Landscape Painting (3). II—Teaching: H.D. Ed. 100, 101—Principles of Human Development (3, 3); Ed. 130 or 131—Theory of Junior or Senior High School (2); Ed. 140—Curriculum, Instruction and Observation in Art (3); Ed. 145—Principles of High School Teaching (3); Ed. 148—Practice Teaching in Art (8).

<sup>2</sup>See information on page 5 concerning the American Civilization Program.

## Textiles and Clothing Curriculum

### CRAFTS (FOR MEN)

Requirements are the same as for women with the following modifications:

*Additions:* A. S. 1, 2, 3, 4; also 9 hours in crafts, art therapy or other courses closely related to the student's objective. These to be selected in consultation with the student's adviser and approved by him.

*Omissions:* H. E. 1, Foods 1; Home Mgt. 150, 151; Hea. 2, 4.

For other curricula in art, see offerings under the College of Education and the College of Arts and Sciences.

### TEXTILES AND CLOTHING

The curricula in textiles and clothing are planned to help students to be intelligent and responsible consumers; to give them preliminary training for positions in textiles and clothing in business, in textile testing, and research in textiles and clothing.

Men majoring in these curricula will be allowed substitutions for certain required courses and will choose supporting courses according to their particular interests and needs.

Clo. 20, Clothing Construction, is to be taken in the second semester of the freshman year instead of an elective. Clo. 22, Clothing Construction, may be required of students needing the additional experience.

	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or .....	3	3
Eng. 5, 6—Composition and English Literature .....	(3)	(3)
Chem. 11, 13, Science or Elective <sup>1</sup> .....	3	3
Foods 1—Introductory Foods .....	..	3
Econ. 37—Fundamentals of Economics .....	3	(3)
Psych. 1—Introduction to Psychology .....	(3)	3
Pr. Art 20—Costume Design .....	..	3
Clo. 21—Pattern Design .....	3	(3)
A. S. 3, 4—Basic Air Science (for men students) .....	(2)	(2)
Physical Activities .....	1	1
Electives .....	3	..
Total .....	16	16

<sup>1</sup> Chem. 11, 13 are required for a major in textiles.

## TEXTILES CURRICULUM

	Semester	
	I	II
<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home .....	3	3
Foods 101—Meal Management .....	2	..
Nut. 10—Elements of Nutrition or .....	3	..
Nut. 110—Nutrition .....	(3)	..
Art .....	..	2
Phys. 1, 2—Elements of Physics .....	3	3
Chem. 31, 32, 33, 34—Elements of Organic Chemistry .....	3	3
Math. 10—Algebra .....	..	3
Tex. 100—Advanced Textiles .....	3	..
Tex. 102—Textile Testing .....	..	3
Total .....	17	17
<i>Senior Year</i>		
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
Microb. 51—Household Microbiology .....	..	3
Tex. 101—Problems in Textiles .....	..	3
Chem.—Chemistry .....	..	4
Home Mgt. 152—Experience in Management of the Home ..	3	..
B. A. 130—Elements of Business Statistics .....	3	..
Speech <sup>2</sup> .....	..	3
C. Ed. 110—Child Development III .....	3	..
Elective .....	2	..
Total .....	14	16

## TEXTILES AND CLOTHING CURRICULUM

<i>Junior Year</i>		
Home Mgt. 150, 151—Management of the Home .....	3	3
Nut. 10—Elements of Nutrition .....	..	3
Art .....	3	3
Clo. 122—Tailoring .....	2	..
Tex. 100—Advanced Textiles .....	3	..
Foods 101—Meal Management .....	2	..
Psychology .....	..	3
Tex. 108—Decorative Fabrics .....	2	..
Microb. 51—Household Microbiology .....	..	3
C. Ed. 110—Child Development III .....	3	(3)
Total .....	16-18	15

<sup>1</sup> See information on page 5 concerning the American Civilization Program.<sup>2</sup> Selected with adviser's consent.

## Home Economics Education Curriculum

	Semester	
	I	II
<i>Senior Year</i>		
H. 5, 6—History of American Civilization <sup>1</sup> .....	3	3
Tex. 105—Consumer Problems in Textiles .....	(3)	3
Home Mgt. 152—Experience in Management of the Home ...	3	(3)
Clo. 120—Draping .....	3	..
Clo. 124—Projects and Readings in Textiles and Clothing ...	2	..
Speech <sup>2</sup> .....	3	(3)
Clo. 126—Fundamentals of Fashion .....	..	3
Electives .....	3	5
Total .....	17	14

### HOME ECONOMICS EDUCATION

Students electing this curriculum may register in the College of Education or in the College of Home Economics.

The home economics education curriculum is designed for students who are preparing to teach vocational or general home economics or to engage in any phase of home economics work which requires a knowledge of teaching methods. It includes studies of all phases of home economics and the allied sciences, with professional preparation for teaching these subjects. A student majoring in this curriculum may also qualify for a science minor.

The offering includes both undergraduate and graduate programs leading to the degrees of Bachelor of Science, Master of Education, and Master of Science.

	Semester	
	I	II
<i>Freshman Year</i>		
Ed. 1—Freshman Orientation <sup>3</sup> .....	0	..
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man or Psych. 1—Introduction to Psychology....	3	..
Chem. 11, 13 or 1, 3—General Chemistry .....	3-4	3-4
H. E. 1—Home Economics Orientation .....	0	..
Tex. 1—Textiles .....	..	3
Pr. Art 1—Design .....	3	..
Hea. 2—Personal Health (women) .....	2	..
Hea. 4—Community Health (women) .....	..	2
P. E. 2, 4.....	1	1
G. & P. 1—American Government .....	..	3
Sp. 1—Public Speaking .....	..	3
Electives .....	1-2	..
Total .....	16-18	18-19

<sup>1</sup> See information on page 5 concerning the American Civilization Program.

<sup>2</sup> Selected with adviser's consent.

<sup>3</sup> May be taken either semester.



	Semester	
	I	II
<i>Sophomore Year</i>		
Ed. 2—Introduction to Education <sup>1</sup> .....	2	..
Eng. 3, 4—Composition and World Literature or Eng. 5, 6—Composition and English Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Pr. Art 20—Costume Design .....	..	3
Clo. 20—Clothing .....	3	..
Foods 2, 3—Foods <sup>2</sup> .....	3	3
P. E. 6.....	1	1
Bot. 1—General Botany.....	..	4
Electives <sup>3</sup> .....	1-2	..
Total .....	16-17	17
<i>Junior Year</i>		
H. E. Ed. 140—Curriculum, Instruction and Observation ....	3	..
H. D. Ed. 100, 101—Principles of Human Development .....	3	3
Home Mgt. 150, 151—Home Management .....	3	3
Foods 101—Meal Management .....	2	..
Clo. 22—Clothing Construction .....	..	2
Nut. 10 or 110—Elements of Nutrition .....	..	3
Econ. 37—Fundamentals of Economics .....	..	3
Zool. 1—General Zoology .....	4	..
Electives .....	2	3
Total .....	17	17
<i>Senior Year*</i>		
H. E. Ed. 102—Problems in Teaching Home Economics ....	3	..
Ed. 145—Principles and Methods of Secondary Education.....	3	..
H. E. Ed. 148—Teaching Secondary Vocational Home Economics .....	8	..
Home Mgt. 152—Practice in Management of the Home .....	3	..
Pr. Art 2—Survey of Art History or Clo. 128—Home Furnishings .....	..	2-3
Microb. 1 or 51—Microbiology .....	..	3-4
Electives .....	..	6
Total .....	17	11-13

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 \*Subjects in the senior year will be so arranged that the two semesters may be interchanged.

<sup>1</sup> May be taken either semester.

<sup>2</sup> Foods 52, 53 carries a prerequisite of Chem. 31, 32, 33, 34.

<sup>3</sup> Chem 31, 32, 33, 34, Organic Chemistry, recommended as an elective or in lieu of General Botany for individuals with special interest in and need for Food and Nutrition.

## COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designated by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates. (Not all courses numbered 100 to 199 may be taken for graduate credit.)

200 to 299: courses for graduates only.

399: Graduate Research.

A course with a single number extends through one semester. A course with a double number extends through two semesters.

Courses not otherwise designated are lecture courses. The number of credit hours is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

### FOOD, NUTRITION, AND INSTITUTION MANAGEMENT\*

*Associate Professor:* BRAUCHER.

*Assistant Professors:* COLLINS AND CORNELL.

*Instructors:* COX AND HAMMEL.

*Lecturers:* PELCOVITS AND SIDWELL.

#### FOOD

##### *Foods 1. Introductory Foods. (3)*

First and second semesters. Three laboratory periods a week. Laboratory fee, \$10.00. For students in other colleges and for majors in crafts, practical art, textiles and clothing.

##### *Foods 2, 3. Foods. (3, 3)*

First and second semesters. One lecture and two laboratory periods a week. Prerequisites, Chem. 1, 2 or 11, 13. Laboratory fee, \$10.00. Composition, structure and preparation of food with study of scientific principles involved. Analysis of recipes and criteria for acceptable products.

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\*Tailored white uniforms are required for all laboratory work in Food and Nutrition.

*Foods 52, 53. Science of Food Preparation. (3, 3)*

First and second semesters. One lecture and two laboratory periods a week. Prerequisites, Chem. 31, 32, 33, 34 to precede or parallel. Laboratory fee, \$10.00. Composition and structure of food with study of the fundamental principles involved in food preparation.

NUTRITION

*Nut. 10. Elements of Nutrition. (3)*

First and second semesters. Laboratory fee, \$3.00. For students in other colleges and for majors in crafts, practical art, textiles and clothing.

*For Advanced Undergraduates and Graduates*

FOOD

*Foods 100. Food Economics. (2)*

First semester. One lecture and one laboratory period a week. Prerequisite, Foods 1 or 2, 3, or 52, 53. Laboratory fee, \$7.00. Sources of our food supply; buying of food for the family.

*Foods 101. Meal Management. (2)*

First and second semesters. Two laboratory periods a week. Prerequisite, Foods 1, or 2, 3 or 52, 53. Laboratory fee, \$10.00. Planning, preparing and serving meals for family groups, considering nutritional needs and management of money, time and labor; includes entertaining.

*Foods 102. Experimental Foods. (3)*

First semester. One lecture and two laboratory periods a week. Prerequisites, Foods 52, 53; Organic Chemistry, Chem. 31, 32, 33, 34. Laboratory fee, \$10.00. A study of food preparation processes from the experimental viewpoint.

*Foods 104. Advanced Foods. (2-3)*

First semester. Prerequisites, Foods 52, 53, Chem. 31, 32, 33, 34. Laboratory fee, \$3.00. The physical and chemical behavior of the basic food constituents in food preparation and processing; study of recent advances in those fields.

*Foods 105. Foods of Other Countries. (3)*

Second semester. One lecture and two laboratory periods a week. Prerequisite, Foods 1 or 2, 3, or 52, 53. Laboratory fee, \$10.00. Food preparation and food customs of the peoples of other countries.

NUTRITION

*Nut. 110. Nutrition. (3)*

First and second semesters. Prerequisites, Foods 2, 3, or 52, 53; Organic Chemistry, Chem. 31, 32, 33, 34 to precede or parallel, or consent of instructor. Laboratory fee, \$10.00. A scientific study of principles of human nutrition. Animal experimentation. Correction of nutritional deficiencies by dietary studies.

*Nut. 111. Child Nutrition. (2)*

First and second semesters. One lecture and one laboratory period a week. Prerequisites, Foods 1 or 2, 3, or 52, 53; Nut. 10 or 110. Laboratory fee, \$7.00. Principles of human nutrition applied to growth and development of children. Experience in a nursery school.

*Nut. 112. Dietetics. (3)*

Second semester. One lecture and two laboratory periods a week. Prerequisite, Nut. 110. Laboratory fee, \$10.00. A study of food selection for health; planning and calculating diets for children, adults and family units; methods of teaching food values and nutrition.

*Nut. 113. Diet and Disease. (2)*

Second semester, alternate years. Prerequisite, Nut. 110. Laboratory fee, \$3.00. Modifications of the normal adequate diet to meet the nutritional needs in treating certain diseases.

*Nut. 114. Nutrition for Health Services. (3)*

Second semester. Prerequisite, Nut. 10 or the equivalent. Laboratory fee, \$3.00. A study of nutritional status and the effect of food habits and food consumption on family health. Nutritional requirements for individuals in different stages of development. Techniques and procedures for the application of nutrition knowledge with consideration of various economic levels and social backgrounds. For graduate nurses, dietitians, health teachers, and social workers.

*Nut. 120. Advanced Nutrition. (3)*

First semester. Prerequisites, Foods 53; Zool. 1; Biochem. 81, 82 or concurrent. Laboratory fee, \$3.00. The progress of nutrition as found in the results of current research, with emphasis on interpretation and application.

*For Graduates*

FOOD

*Foods 200. Advanced Experimental Foods. (3-5)*

Second semester. Two lectures and three laboratory periods a week. Laboratory fee, \$10.00. Selected readings of literature in experimental foods. Development of individual problem.

*Foods 204. Recent Trends in Foods. (2-3)*

First semester. Laboratory fee, \$3.00. Recent trends in the preparation, processing and marketing of foods.

*Foods 210. Readings in Foods. (3)*

Prerequisite, Foods 102, 104. A critical survey of literature on recent developments in food research.

*Foods 220. Seminar. (1, 1)*

First semester. Reports and discussions of current research in foods. Laboratory fee, \$3.00.

*Foods 399. Research. (6)*

First and second semesters. Laboratory fee, \$10.00. Credit in proportion to work done and results accomplished. Investigation in some phases of food which may form the basis of a thesis.

NUTRITION

*Nut. 204. Recent Advances in Nutrition. (2-3)*

Second semester. Laboratory fee, \$3.00. Factors that affect the nutritive value of food during production, cookery processes, holding practices, processing, packaging and storage.

*Nut. 208. Recent Progress in Human Nutrition. (3)*

Second semester. Laboratory fee, \$3.00. Recent developments in the science of nutrition with emphasis upon the interpretations of these findings for application in health and disease. Aids for the dietitian in creating a better understanding of nutrition among patients, students of graduate status and personnel, such as those in the dental and medical professions.

*Nut. 210. Readings in Nutrition. (3)*

First semester. Laboratory fee, \$3.00. Reports and discussion of outstanding nutritional research and investigation.

*Nut. 211. Problems in Nutrition. (3-5)*

Second semester. Laboratory fee, \$10.00. Experience in a phase of nutrition research which is of interest to the student. Use of experimental animals, human studies, or an extensive and critical survey of the literature.

*Nut. 212. Nutrition for Community Service. (3)*

First semester. Laboratory fee, \$3.00. Applications of the principles of nutrition to various community problems. Students may work on problems of their own choosing.

*Nut. 220. Seminar. (1, 1)*

First and second semesters. Reports and discussions of current research in nutrition.

*Nut. 399. Research. (6)*

First and second semesters. Laboratory fee, \$10.00. Credit in proportion to work done and results accomplished. Investigation in some phase of nutrition which may form the basis of a thesis.

*For Advanced Undergraduates and Graduates*

INSTITUTION MANAGEMENT

*Inst. Mgt. 160. Institution Organization and Management. (3)*

First semester. Prerequisites, Foods 52, 53; Nut. 110; Home Mgt. 150, 151 to precede or parallel. Vocational opportunities in the field of institution management; organization of food service departments. Planning of functional kitchens and selection of equipment for quantity food services. Field trips.



## *Food, Nutrition, and Institution Management*

### *Inst. Mgt. 161. Institution Food Purchasing and Cost Control. (3)*

Second semester. Prerequisites, Foods 52, 53; Nut. 10 or 110 or equivalent. Selection of food, method and units of purchase in large quantities. Budgets, food cost accounting and control. Field trips.

### *Inst. Mgt. 162. Institution Foods. (3)*

Second semester. One lecture and two laboratory periods a week. Prerequisites, Foods 52, 53; Nut. 10 or 110 or consent of instructor. Laboratory fee, \$10.00. Application of basic principles and procedures of food preparation to quantity food preparation. Standardizing recipes; menu planning for various types of food services; determination of food costs. Field trips.

### *Inst. Mgt. 164. Food Service Administration and Personnel Management. (2)*

Second semester. Prerequisites, Inst. Mgt. 160, 161, 162 or the equivalent. Administrative policies, problems, and personnel management. Field trips.

### *Inst. Mgt. 165. School Food Service. (3)*

First semester. Two lectures and one morning a week for practical experience in a school food service. Prerequisites, Foods 1 or 2, 3 or 52, 53, and Nut. 10 or 110, or consent of instructor. Not open to Institution Management majors. Study of organization, management, menu planning, food purchasing and preparation and cost control, for serving the noon meal in schools and child care centers.

### *Inst. Mgt. S166. Nutrition and Meal Planning. (2)*

Summer only. Special application to group food services; school lunches, restaurants, and hospitals.

### *Inst. Mgt. S168. Cost Accounting for School Food Service. (2)*

Summer session. Food cost accounting systems for school lunch programs; programs and procedures of accumulating, recording, and interpreting data for control.

### *Inst. Mgt. S169. Food Purchasing for School Food Service. (2)*

Summer session. Purchasing procedures; grading, processing, and packing of food; selection of food, specifications, and marketing regulations.

## *For Graduates*

### *Inst. Mgt. 200. Food Service Administration and Supervision. (3)*

First semester. One lecture and two laboratory periods a week. Prerequisite, Inst. Mgt. 162, 165, or the equivalent. Supervision and administrative policies; personnel management with emphasis on human relations, and philosophy underlying management practices.

## HOME ECONOMICS—GENERAL

*Professor: LIPPEATT.*

*Assistant Professor: WILSON.*

### *H. E. 1. Home Economics Orientation. (0)*

First semester. Required of Home Economics freshmen. Orientation to the student activities and academic life of the University and to the field of home economics.

Demonstrations, lectures, panels, group and individual discussions on personal and academic adjustment and on vocations open to persons trained in home economics.

*H. E. 103. Demonstrations. (2)*

Second semester. Two laboratory periods a week. Prerequisites, Clo. 20; Foods 1 or 2, 3; Tex. 1. Laboratory fee, \$10.00. Experience in planning and presenting demonstrations.

*H. E. 190. Special Problems in Home Economics. (1-3)*

Junior, senior or graduate standing and consent of instructor. Laboratory fee, \$3.00 to \$10.00, depending upon department and credit hours. Problem may be in any area of home economics and will carry the name of the subject matter of the problem.

## HOME MANAGEMENT

*Associate Professor:* CROW.

*Instructor:* SMITH.

*Lecturer:* THOMAS.

*Home Mgt. 150, 151. Management of the Home. (3, 3)*

First and second semesters. Two lectures and one laboratory period. Home Mgt. 150 prerequisite to Home Mgt. 151. Laboratory fee, Home Mgt. 151, \$3.00. The philosophy and application of principles of scientific management in the home through the use of resources; management of time, energy, and money; introduction to housing as a social problem; housing to meet family needs, selection, care and use of household equipment.

*Home Mgt. 152. Experience in Management of the Home. (3)\**

First and second semesters. Prerequisites, Home Mgt. 150, 151. Laboratory fee, \$10.00. Residence for one-third of a semester in the home management house. Experience in planning, coordinating and participating in the activities of a household, composed of a faculty member and a group of students. (See p. 4)

*Home Mgt. 155. Money Management. (2)*

Two lectures. Prerequisite, Home Mgt. 150 or permission from instructor. Integrating the use of money and other available resources to meet both individual and family wants and needs. Emphasis on areas of finance influencing family economic decisions.

*Home Mgt. 156. Household Equipment. (2)*

Two laboratory periods a week. Laboratory fee, \$3.00. Problems in selection, use and care of small and large equipment.

*Home Mgt. 158. Special Problems in Management. (3)*

Two lectures; one two-hour lab. Prerequisite, Home Mgt. 150, 151 or equivalent. Laboratory fee, \$3.00. Analysis of some of the important management problems in work simplification, problems related to housing and household equipment.

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\*A charge of \$40.00 for food and supplies is assessed each student. Students who board at the University may receive a pro-rata refund of the established charge if the dining hall card is turned in during the period of residence in the home management house. Students not living in dormitories are billed at the rate of \$5.00 per week for a room in the home management house.

## *Practical Art and Crafts*

Fee, \$3.00. Etching, sawing, soldering, raising, and enameling using copper and sterling silver. Good, original design is stressed.

### *Cr. 40, 41. Weaving. (2, 2)*

First and second semesters. Three laboratory periods a week. Prerequisite, Pr. Art 1. Fee, \$3.00. Creative weaving on harness looms, inkle looms and cards. Emphasis is placed upon good texture, pattern and color with relation to the purpose of each textile.

## *For Advanced Undergraduates and Graduates*

### **PRACTICAL ART**

#### *Pr. Art 100, 101. Mural Design. (2, 2)*

First semester, alternate years. Three laboratory periods a week. Prerequisites, Pr. Art 1, 21. Fee, \$3.00. Group and individual expression serving two types of objectives: temporary murals for the public schools developed from classroom study and rendered in colored chalk on wrapping paper; murals for permanent architectural decoration considering propriety to setting and rendered in oil paint, gouache, fresco, or mosaic. Brief study of civilization's use of murals. Trips to nearby murals having social significance.

#### *Pr. Art 120, 121. Costume Illustration. (2, 2)*

First and second semesters. Two laboratory periods a week. Prerequisites, Pr. Art 1, 2, 20, 21. Fee, \$3.00. Fashion rendering emphasizing clothing structure, representation of materials and development of individual rendering technique. Development of techniques employing transparent water color, India ink, Craftint, Zipatone and Burgess process. Study of styles of contemporary fashion illustrators.

#### *Pr. Art 124, 125. Individual Problems in Costume. (2, 2)*

First and second semesters. Two laboratory periods a week. Prerequisites, Pr. Art 1, 2, 20, 21, 120, 121. Fee, \$3.00. Advanced problems in fashion illustration or costume design for students who are capable of independent work. Program developed in consultation with the instructor.

#### *Pr. Art 132. Advertising Layout. (2)*

First and second semesters. Two laboratory periods a week. Prerequisites, Pr. Art 1, 20, 30, 40. Fee, \$3.00. Designing of rough to finished layouts for advertisements for newspapers, magazines, packaging, brochures and other forms of direct advertising. Included, is the study of typography and illustration and their relationship to reproduction. Experience in use of the airbrush. Field trip.

#### *Pr. Art 134, 135. Individual Problems in Advertising. (2, 2)*

First and second semesters. Two laboratory periods a week. Prerequisites, Pr. Art 1, 20, 30, 40, 132. Fee, \$3.00. Advanced problems in advertising layout. Opportunity to build skills in one area or more of advertising design. Readings. Field trip.

#### *Pr. Art 136. Display. (2)*

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, 4, 30. Fee, \$3.00. Practice in effective merchandise display in cooperation with retail establishments. Study of other aspects of display through field trips, discussion and research.

*Pr. Art 138. Advanced Photography. (2)*

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, 38, 39. Fee, \$3.00. Advanced experimental effects emphasizing design in photography. Each student must have his own camera.

*Pr. Art 142, 143. Advanced Interior Design. (2, 2)*

First and second semesters. Two laboratory periods a week. Prerequisites, Pr. Art 1, 2, 40, 41. Fee, \$3.00. Designing of rooms drawn in perspective and isometrics and rendered in water color. Coordination with fabrics, floor and wall finishes. Study of budgets, costs, and manufacturing techniques. Field trips.

*Pr. Art 144, 145. Individual Problems in Interior. (2, 2)*

First and second semesters. Two laboratory periods a week. Prerequisites, Pr. Art 1, 2, 40, 41, 142, 143. Fee, \$3.00. Advanced problems in interior design for students who are capable of independent work. Students assume the role of interior decorator serving the needs of theoretical clients. Field trips.

CRAFTS

*Cr. 102. Creative Crafts. (2-4)*

Summer session. Daily laboratory periods. Prerequisites, Pr. Art 1 and permission of the instructor. Fee, \$3.00. Interests of the persons enrolled will determine the crafts to be pursued. Suggested: block printing, wood burning, crayon decoration, paper sculpture, clay modeling, metalry, weaving. Excellent for teachers, directors of recreation centers, and persons who desire an introduction to recreational crafts.

*Cr. 120, 121. Advanced Ceramics. (2, 2)*

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, Cr. 20, 21. Fee, \$3.00. Advanced techniques in clay sculpture and in building pottery on the potter's wheel. Study of glaze composition and calculation. Experimentation with several clay bodies.

*Cr. 124, 125. Individual Problems in Ceramics. (2, 2)*

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, Cr. 20, 21, 120, 121. Fee, \$3.00. Individual problems in clay sculpture and pottery making. Use of gas kiln fired in the medium cone range and experimental research in glazes and original textural effects.

*Cr. 130, 131. Advanced Metalry. (2, 2)*

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, Cr. 30, 31. Fee, \$3.00. Advanced applications of basic techniques in metal working and jewelry making. Introduction of ring making, stone setting and metal casting.

*Cr. 134, 135. Individual Problems in Metalry. (2, 2)*

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, Cr. 30, 31, 130, 131. Fee, \$3.00. Advanced problems in metalry and jewelry making. Supervised laboratory for students capable of independent work and research.

*Cr. 140, 141. Advanced Weaving. (2, 2)*

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1,



## *Textiles and Clothing*

Cr. 40, 41. Fee, \$3.00. Advanced weaving on four and eight harness looms stressing creative weaves in relation to functional use.

Cr. 144, 145. *Individual Problems in Weaving.* (2, 2)

First and second semesters. Three laboratory periods a week. Prerequisites, Pr. Art 1, Cr. 40, 41, 141. Fee, \$3.00. Advanced problems in creative weaving. Supervised laboratory for students capable of independent work and research.

## TEXTILES AND CLOTHING

*Professor:* MITCHELL.

*Assistant Professors:* HEAGNEY AND WILBUR.

*Instructor:* COMPTON.

### TEXTILES

*Tex. 1. Textiles.* (3)

First and second semesters. Two lectures and one laboratory period a week. Laboratory fee, \$3.00. Basic introduction to textile field. Study of textile fibers; evaluation of labeling on textiles; analysis and care of fabrics.

### CLOTHING

*Clo. 20. Clothing Construction.* (3)

First and second semesters. Three laboratory periods a week. Prerequisite, Tex. 1 for home economics students. Laboratory fee, \$3.00. Interpretation and use of commercial patterns; fabric study; basic fitting and construction techniques.

*Clo. 21. Pattern Design.* (3)

First and second semesters. Three two-hour laboratory periods a week. Prerequisite, Clo. 20 and consent of Department. Laboratory fee, \$3.00. Pattern study, figure analysis and pattern alteration, development and adaptation of individual basic pattern, creation of original designs.

*Clo. 22. Clothing Construction.* (2)

First and second semesters. Two laboratory periods a week. Prerequisites, Tex. 1 and Clo. 20. Laboratory fee, \$3.00. Continuation of Clo. 20. To give additional experience in the use and adaptation of commercial patterns and for increased skill in construction techniques.

## *For Advanced Undergraduates and Graduates*

### TEXTILES

*Tex. 100. Advanced Textiles.* (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, Tex. 1. Laboratory fee, \$3.00. The intensive study of textiles from the fiber to the finished fabric, from the producer to the consumer. Analysis of fabric construction and serviceability features.



*Tex. 101. Problems in Textiles. (3)*

Second semester. One lecture and two laboratory periods a week. Prerequisites, Tex. 100, Organic Chemistry. Laboratory fee, \$3.00. Individual experimental problems in textiles.

*Tex. 102. Textile Testing. (3)*

Second semester. Three laboratory periods a week. Prerequisite, Tex. 100. Laboratory fee, \$3.00. The theory of textile testing methods, the repeated use of physical and chemical testing, the interpretation of the data, and the presentation of the findings.

*Tex. 105. Consumer Problems in Textiles. (3)*

First and second semesters. Three lectures a week. Prerequisite, Tex. 1, or equivalent. Laboratory fee, \$3.00. Study of textiles from the consumer point of view for personal, household and institutional use. Evaluation of such textiles through analysis of comparison shopping, laboratory tests, survey of literature and field trips.

*Tex. 108. Decorative Fabrics. (2)*

First semester. Two lectures a week. Prerequisite, Tex. 1, or equivalent. Laboratory fee, \$3.00. Study of historic and contemporary fabrics and laces with analysis of designs and techniques of decorating fabrics.

## CLOTHING

*Clo. 120. Draping. (3)*

First semester. Three laboratory periods a week. Prerequisites, Clo. 21, Clo. 122. Laboratory fee, \$3.00. Demonstrations and practice in creating costumes in fabrics on individual dress forms; modeling of garments for class criticism.

*Clo. 122. Tailoring. (2)*

First and second semesters. Two laboratory periods a week. Prerequisite, Clo. 21. Laboratory fee, \$3.00. Construction of tailored garments, requiring professional skill.

*Clo. 123. Children's Clothing. (2)*

First semester. Two laboratory periods a week. Prerequisite, Clo. 20, or equivalent. Laboratory fee, \$3.00. Children's clothing from the standpoint of age, health, beauty, economy and personality; development of original designs.

*Clo. 124. Projects and Readings in Textiles and Clothing. (2)*

First semester. Two lectures a week. Prerequisites, Clo. 120, Tex. 100. Laboratory fee, \$3.00. Analysis of wardrobe planning preparatory to the job situation; grooming as related to the college girl and to the job holder; survey of job opportunities in the field; special projects.

*Clo. 125. Costume Draping. (3)*

Second semester. Three two-hour laboratory periods a week. Prerequisite, Pr. Art 20 or consent of Department. Laboratory fee, \$3.00. By means of draping in fabrics on a form the development of costumes both historic and contemporary for specific needs, purposes and occasions. Consideration of fabric, line and color are an integral part of the work.

*Clo. 126. Fundamentals of Fashion. (2, 3)*

Second semester. Prerequisite, Clo. 120. Laboratory fee, \$3.00. Fashion history; current fashions, how to interpret and evaluate them; fashion show techniques; fashion promotion. The course includes oral and written reports, group projects, panel discussions and field trips.

*Clo. 127. Apparel Design. (3)*

Second semester. One lecture and two laboratory periods a week. Prerequisite, Clo. 120. Laboratory fee, \$3.00. The art of costuming; trade and custom methods of clothing design and construction; advanced work in draping, pattern design and/or tailoring with study of the interrelationship of these techniques.

*Clo. 128. Home Furnishings. (3)*

First and second semesters. Three laboratory periods a week. Prerequisites, Tex. 1, Clo. 20, or consent of instructor. Laboratory fee, \$3.00. Selection of fabrics for home and institutional furnishings; care and repair of such furnishings; custom construction of slip covers, draperies, bedspreads, refinishing and upholstering a chair.

*For Graduates*

*Tex. 200. Special Studies in Textiles. (2-4)*

First or second semester. Summer. Laboratory fee, \$3.00. Advanced inquiry into uses, care, types and/or performance of textile materials either contemporary or historic, depending on interest of student(s); compilation of data through testing, surveys, museum visits and/or field trips; writing of technical reports.

*Clo. 220. Special Studies in Clothing. (2-4)*

First or second semester. Laboratory fee, \$3.00. Special areas of clothing are selected according to interest of student(s); consumer, design, functional aspects and/or evaluation and analysis studies are made of those areas. Reports may be written, oral or by group presentation.

*Tex. and Clo. 230. Seminar. (1)*

First and second semesters. Laboratory fee, \$3.00. The breadth and limit of the field of textiles and clothing are investigated; annotated bibliography is developed; one oral report is presented.

*Tex. and Clo. 232. Economics of Textiles and Clothing. (3)*

Second semester. Summer 1960. Laboratory fee, \$3.00. Study of interrelationship of developments in production, distribution and consumption of textiles and clothing affecting consumers and the market. Analysis of consumption trends as related to patterns of family living and population changes.

*Tex. and Clo. 399. Research. (4-6)*

First and second semesters. Laboratory fee, \$3.00. A research problem is selected by the student; thesis for partial fulfillment of the Master of Science degree is written.

## HOME ECONOMICS EDUCATION \*

### *For Advanced Undergraduates and Graduates*

*H. E. Ed. 102. Problems in Teaching Home Economics. (3)*

First and second semesters. Required of seniors in home economics education. Prerequisite, H. E. Ed. 140. A study of the managerial aspects of teaching and administering a homemaking program; the physical environment, organization and sequence of instructional units, resource materials, evaluation, home projects.

*H. E. Ed. 120. Evaluation of Home Economics. (3)*

The meaning and function of evaluation in education; the development of a plan for evaluating a homemaking program with emphasis upon types of evaluation devices, their construction, and use.

*H. E. Ed. 140. Curriculum, Instruction, and Observation. (3)*

First semester. Required of juniors in home economics education. The place and function of home economics education in the secondary school curriculum. Philosophy of education for home and family living; characteristics of adolescence, construction of source units, lesson plans, and evaluation devices; directed observations in junior and senior high school home economics departments.

*H. E. Ed. 148. Teaching in the Secondary School. (8)*

First and second semesters. Prerequisite, H. E. Ed. 140 and 102 or 102 parallel. Fee, \$30 for five or more hours, \$15 for less than five hours. Observation and supervised teaching in approved secondary school home economics departments in Maryland, the District of Columbia and Baltimore City. Eight weeks of practicum in two schools with both junior and senior high school classes. Students must reserve a half day in their schedule for the student teaching assignment.

*H. E. Ed. 200. Seminar in Home Economics Education. (2)*

First semester. General prerequisites must include graduate standing.

*H. E. Ed. 202. Trends in the Teaching and Supervision of Home Economics. (2-4)*

Study of home economics programs and practices in light of current educational trends. Interpretation and analysis of democratic teaching procedures, outcomes of instruction, and supervisory practices.

## ART EDUCATION \*\*

*Ed. 140. Curriculum, Instruction, and Observation. (3)*

First and/or second semesters. Offered in separate sections for the various subject matter areas, namely, English, social studies, foreign language, science, mathematics, art education, business education, industrial education, music education, and physical education. Registration cards must include the subject-matter area as well as the name

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\*For further information see College of Education Catalog.

\*\*Art Education courses taught by Practical Art staff in cooperation with staff of College of Education. For further information see College of Education catalog.

and number of the course. Graduate credit is allowed only by special arrangement. The objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks, and other instructional materials, measurement, and other topics pertinent to the particular subject matter area are treated. Twenty periods of observation.

*Ed. 148. Student Teaching in Secondary Schools. (2-8)*

First and second semesters. Prerequisite, Ed. 140\*. In order to be admitted to a course in student teaching, a student must have an overall grade point average of 2.30, a doctor's certificate indicating that the applicant is free of communicable diseases, and the consent of the instructor in the appropriate area. A review committee on student teaching will assist instructors in evaluating all special cases. Undergraduate credit only. Fee, \$30.00. Application forms for this course must be submitted to the Director of Student Teaching not less than ninety days before registration. Students who register for this course serve as apprentice teachers in the schools to which they are assigned. For 8 credits, full time for one-half of one semester is devoted to this work. For experienced teachers, some graduate students and students in physical education and music education who are planning a split student teaching assignment in elementary and secondary schools, the time and credit may be reduced.

## FACULTY

1960-61

### COLLEGE OF HOME ECONOMICS

#### *Administrative Officer*

SELMA F. LIPPEATT, *Professor of Home Economics and Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945;  
PH.D., Pennsylvania State University, 1953.

#### *Professors*

VIENNA CURTISS, *Professor of Practical Art*

Certificate, Parsons School of Design, 1930; B.A., Arizona State College, 1933;  
M.A., Columbia University, 1935; ED.D., 1957.

T. FAYE MITCHELL, *Professor and Head of Department of Textiles and Clothing*  
B.S., State Teachers College, Springfield, Missouri, 1930; M.A., Columbia University, 1939.

#### *Associate Professors*

PELA F. BRAUCHER, *Associate Professor of Food and Nutrition*

A.B., Goucher College, 1927; M.S., Pennsylvania State University, 1929.

JANE H. CROW, *Associate Professor and Head of Department of Home Management*

B.S., Salem College, 1937; M.S., University of Maryland, 1938.

GEORGE H. CUNEO, *Associate Professor of Practical Art*

B.S., Columbia University, 1945; M.A., 1949.

#### *Assistant Professors*

ELIZABETH N. COLLINS, *Assistant Professor of Institution Management*

B.A., Pembroke College, 1921; M.S., Simmons College, 1947.

E. MAE CORNELL, *Assistant Professor of Food and Nutrition*

PH.B., University of Chicago, 1930; M.A., Columbia University, 1938.

CLELL M. COX, *Assistant Professor of Practical Art*

B.S., Ohio State University, 1940; M.S., 1947.

EILEEN M. HEAGNEY, *Assistant Professor of Textiles and Clothing*

B.S., Pennsylvania State University, 1941; M.A., Columbia University, 1949.



## Faculty

EDWARD L. LONGLEY, JR., *Assistant Professor of Practical Art*

B.A., University of Maryland, 1950; M.A., Columbia University, 1953.

JUNE C. WILBUR, *Assistant Professor of Textiles and Clothing*

B.S., University of Washington, 1936; M.S., Syracuse University, 1940.

LEDA A. WILSON, *Assistant Professor of Home Economics*

B.S., Lander College, 1943; M.S., University of Tennessee, 1950; ED.D., 1954.

## Instructors

NORMA H. COMPTON, *Instructor in Textiles and Clothing*

A.B., George Washington University, 1950; M.S., University of Maryland, 1957.

NANCY L. COX, *Instructor in Food and Nutrition*

B.S., Cedar Crest College, 1957; M.S., New York State College of Home Economics, 1959.

BARBARA ELLIOTT, *Instructor in Practical Art*

B.F.A., Maryland Institute of Art, 1954; M.A., Columbia University, 1957.

IVA HAMMEL, *Instructor in Food and Nutrition*

B.S., Louisiana Polytechnic Institute, 1929; M.E., Colorado State College, 1943.

MARTHANNE SMITH, *Instructor in Home Management*

B.S., Carson Newman College, 1955; M.S., University of Tennessee, 1957.

## Lecturers

FREMONT DAVIS, *Lecturer in Practical Art*

JEANETTE PELCOVITZ, *Lecturer in Institution Management*

B.S., University of Toronto, 1934; M.S., Columbia University, 1940.

VIRGINIA SIDWELL, *Lecturer in Food and Nutrition*

B.S., Pennsylvania State University, 1941; M.S., 1946; PH.D., Iowa State College, 1954

CAROLYN PALMER THOMAS, *Lecturer in Home Management*

B.S., University of Illinois, 1940.

## Research Assistants

VIRGINIA T. DAWSON

B.A., Ohio State University, 1937; M.S., University of Maryland, 1939.

GENEVIEVE C. WATKINS

B.S., University of Maryland, 1956.

ELEANOR F. YOUNG

B.S., University of Maryland, 1955; M.S., 1958.

### *Graduate Assistants*

CLAIRE D. JAFFE

B.S., Pennsylvania State University, 1940.

HELEN SULLIVAN

B.S., University of Maryland, 1953.

SUSAN WENDEBERG

B.S., Brooklyn College, 1957.

### *College of Home Economics Cooperating Staff Members*

MABEL S. SPENCER, *Assistant Professor, Home Economics Education*

B.S., West Virginia University, 1925; M.S., 1946; ED.D., American University, 1959.









COLLEGE  
of  
PHYSICAL EDUCATION,  
RECREATION AND  
HEALTH

Catalog Series 1960-1961



UNIVERSITY OF MARYLAND

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VOLUME 13

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# UNIVERSITY CALENDAR

## FALL SEMESTER 1959

### JANUARY 1960

- 4 Monday—Christmas Recess Ends 8 a.m.
- 20 Wednesday—Pre-Examination Study Day
- 21-27 Thursday to Wednesday, inclusive—Fall Semester Examinations

## SPRING SEMESTER 1960

### FEBRUARY

- 1-5 Monday to Friday—Spring Semester Registration
- 8 Monday—Instruction Begins
- 22 Monday—Washington's Birthday Holiday

### MARCH

- 25 Friday—Maryland Day

### APRIL

- 14 Thursday—Easter Recess Begins After Last Class
- 19 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 18 Wednesday—Military Day
- 26 Thursday—Pre-Examination Study Day
- May 27-  
June 3 } Friday to Friday, inclusive—Spring Semester Examinations
- 29 Sunday—Baccalaureate Exercises
- 30 Monday—Memorial Day, Holiday

### JUNE

- 4 Saturday—Commencement Exercises

## SUMMER SESSION 1960

### JUNE 1960

- 27 Monday—Summer Session Registration
- 28 Tuesday—Summer Session Begins

### AUGUST

- 5 Summer Session Ends

## SHORT COURSES 1960

### JUNE 1960

- 20-25 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 8-13 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 6-9 Tuesday to Friday—Firemen's Short Course

# UNIVERSITY CALENDAR

## FALL SEMESTER 1960

### SEPTEMBER

- 12-16 Monday to Friday—Fall Semester Registration
- 19 Monday—Instruction Begins

### NOVEMBER

- 23 Wednesday—Thanksgiving Recess Begins After Last Class
- 28 Monday—Thanksgiving Recess Ends 8 a.m.

### DECEMBER

- 20 Tuesday—Christmas Recess Begins

### JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day Holiday
- 25 Wednesday—Pre-Examination Study Day

Jan. 26- } Thursday to Wednesday, inclusive—Fall Semester Examinations  
Feb. 1 }

## SPRING SEMESTER 1961

### FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday Holiday

### MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

### APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 17 Wednesday—Military Day
- 30 Tuesday—Memorial Day, Holiday

### JUNE

- 2 Friday—Pre-Examination Study Day
- 4 Sunday—Baccalaureate Exercises
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 10 Saturday—Commencement Exercises

## SUMMER SESSION 1961

### JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

### AUGUST

- 4 Friday—Summer Session Ends

## SHORT COURSES 1961

### JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 7-12 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course



# BOARD OF REGENTS

## and

### MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK	
<i>Chairman</i> .....	1966
McCormick and Company, 414 Light Street, Baltimore 2	
EDWARD F. HOLTER	
<i>Vice-Chairman</i> .....	1968
The National Grange, 744 Jackson Place, N.W., Washington 6	
B. HERBERT BROWN	
<i>Secretary</i> .....	1960
The Baltimore Institute, 10 West Chase Street, Baltimore 1	
HARRY H. NUTTLE	
<i>Treasurer</i> .....	1966
Denton	
LOUIS L. KAPLAN	
<i>Assistant Secretary</i> .....	1961
5800 Park Heights Avenue, Baltimore 15	
ENOS S. STOCKBRIDGE	
<i>Assistant Treasurer</i> .....	1960
10 Light Street, Baltimore 2	
THOMAS W. PANGBORN .....	1965
The Pangborn Corporation, Pangborn Blvd., Hagerstown	
THOMAS B. SYMONS .....	1963
Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	
C. EWING TUTTLE .....	1962
907 Latrobe Building, Charles and Read Streets, Baltimore 2	
WILLIAM C. WALSH .....	1968
Liberty Trust Building, Cumberland	
MRS. JOHN L. WHITEHURST .....	1967
4101 Greenway, Baltimore 18	

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Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

# OFFICERS OF ADMINISTRATION

## *Principal Administrative Officers*

WILSON H. ELKINS, *President*

B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936;  
D. PHIL., 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBAKE, *Dean of the Faculty*

B.S., State Teachers College, California, Pa., 1934; M.A., Ohio State University, 1936;  
PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

## *Emeritus*

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

## *Administrative Officers of the Schools and Colleges*

MYRON S. AISENBERG, *Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*

B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; ED.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*

R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University of Denver, 1942; M.B.A. in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agricultural Experiment Station and Head, Department of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D., University of Maryland, 1933.

ROGER HOWELL, *Dean of the School of Law*

B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland, 1917.

WILBERT J. HUFF, *Director, Engineering Experiment Station*

B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale University, 1917; D.SC. (HON.), Ohio Northern University, 1927.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945; PH.D., Pennsylvania State University, 1953.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

PAUL E. NYSTROM, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.

J. FREEMAN PYLE, *Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

LEON P. SMITH, *Dean of the College of Arts and Sciences*

B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930; Diplome le l'Institut de Touraine, 1932.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; PH.D., (HON.), University of Louisville, 1946.

### *General Administrative Officers*

G. WATSON ALGIRE, *Director of Admissions and Registrations*

B.A., University of Maryland, 1930; M.S., 1931.

THEODORE R. AYLESWORTH, *Professor of Air Science and Head, Department of Air Science*

B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania, 1949.

NORMA J. AZLEIN, *Registrar*

B.A., University of Chicago, 1940.

- B. JAMES BORRESON, *Executive Dean for Student Life*  
B.A., University of Minnesota, 1944.
- DAVID L. BRIGHAM, *Director of Alumni Relations*  
B.A., University of Maryland, 1938.
- C. WILBUR CISSEL, *Director of Finance and Business*  
B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.
- WILLIAM W. COBEY, *Director of Athletics*  
A.B., University of Maryland, 1930.
- LESTER M. DYKE, *Director of Student Health Service*  
B.S., University of Iowa, 1936; M.D., University of Iowa, 1926.
- GEARY F. EPFLEY, *Dean of Men*  
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
- GEORGE W. FOGG, *Director of Personnel*  
B.A., University of Maryland, 1926; M.A., 1928.
- ROBERT J. MCCARTNEY, *Director of University Relations*  
B.A., University of Massachusetts, 1941.
- GEORGE W. MORRISON, *Associate Director and Supervising Engineer Physical Plant (Baltimore)*  
B.S., University of Maryland, 1927; E.E., 1931.
- HOWARD ROVELSTAD, *Director of Libraries*  
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S. Columbia University, 1940.
- ADELE H. STAMP, *Dean of Women*  
B.A., Tulane University, 1921; M.A., University of Maryland, 1924.
- GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*  
B.S., University of Maryland, 1933.

### *Division Chairmen*

- JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*  
B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.
- HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*  
B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.
- WILBERT J. HUFF, *Chairman of the Division of Physical Sciences*  
B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale University, 1917; D.SC., (HON.), Ohio Northern University, 1927.
- CHARLES E. WHITE, *Chairman of the Lower Division*  
B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.
- ADOLF E. ZUCKER, *Chairman of the Division of Humanities*  
B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.

# CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

## GENERAL COMMITTEE ON EDUCATIONAL POLICY

Dr. Ronald Bamford (Graduate School), *Chairman*

## COMMITTEE ON ADMISSIONS

Dr. Russell G. Brown (Agriculture), *Chairman*

## COMMITTEE ON INSTRUCTIONAL PROCEDURES

Dr. Ronald Bamford (Graduate School), *Chairman*

## COMMITTEE ON SCHEDULING AND REGISTRATION

Dr. Robert Rappleye (Agriculture), *Chairman*

## COMMITTEE ON PROGRAMS, CURRICULA AND COURSES

Dr. Irvin C. Haut (Graduate School), *Chairman*

## COMMITTEE ON SCHOLARSHIPS AND GRANTS-IN-AID

Dr. Paul Nystrom (Agriculture), *Chairman*

## COMMITTEE ON FACULTY RESEARCH

Dr. Edward J. Herbst (Medicine), *Chairman*

## COMMITTEE ON PUBLIC FUNCTIONS AND COMMENCEMENTS

Mr. B. James Borreson (Executive Dean for Student Life), *Chairman*

## COMMITTEE ON LIBRARIES

Dr. Charles Murphy (Arts and Sciences), *Chairman*

## COMMITTEE ON UNIVERSITY PUBLICATIONS

Dr. Charles A. Taff (Business and Public Administration), *Chairman*

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## THE COLLEGE

THE COLLEGE OF PHYSICAL EDUCATION, RECREATION, AND HEALTH PROVIDES preparation leading to the Bachelor of Science degree in the following professional areas: physical education, dance, health education, recreation, and physical therapy. The College also offers special curricula in safety education and elementary physical education. Moreover, in conjunction with the Graduate School and the College of Education, graduate programs leading to the master's and doctor's degrees are available in physical education, health education and recreation. The College provides a research laboratory for faculty members and graduate students who are interested in investigating the effects of exercise and various physical education activities upon the body, as well as determining methods and techniques of teaching various sports.

A two year required program of physical education is provided by this College for all men and women of the University, and a one year health education program for all freshman women. The College provides an extensive intramural sports program for both men and women.

In addition to its various on-campus offerings, this College regularly conducts courses in physical education, health education and recreation for teachers in various parts of the State of Maryland and conducts workshops for teachers wherever requested by school officials.

### Facilities

The facilities of the College are unusual for a University of this size. Four separate buildings are used for the Women's Department, the Intramural Department, the Required Program for Men, and the Physical Education Teacher Education Program. There is also ample outdoor play space. Some of the facilities are shared with the Department of Intercollegiate Athletics.

#### INDOOR FACILITIES

**THE STUDENT ACTIVITIES BUILDING.** This building houses the offices of the Department of Intercollegiate Athletics and the College of Physical Education, Recreation, and Health. It contains six activity teaching stations: the main arena, the swimming pool, the small gym, the weight training room, the wrestling room, and combination indoor golf driving range and dance studio. In addition there are six classrooms, a research laboratory, a departmental library, and conference room.

The main arena of this building has a seating capacity of 12,004 and 19,796 sq. ft. of floor space. This area provides facilities for class work in basketball, volleyball, badminton, and bait casting.

The swimming pool is divided into two areas by a permanent bulkhead. The shallow end is 42 x 24 feet and the large area is 42 x 75 feet with a depth ranging from 4 to 13 feet.

## Facilities

The small gymnasium may be used for basketball, volleyball, and gymnastics, including tumbling, trampolining and all types of apparatus work. The total floor space is 9,462 sq. ft.

The wrestling room (8,056 sq. ft.) is covered with mats.

The weight room is equipped with sufficient weights for ten lifting stations.

The dance studio - golf driving range (3,256 sq. ft.) has two nylon nets which provide four golf driving stations. In addition part of the floor is covered with a green rug for putting practice. The nets may be raised so that the entire floor space is available for dancing.

**PREINKERT FIELD HOUSE.** Preinkert Field House contains the offices of the Department of Physical Education for Women and Health Education for Women. Its main lounge serves as a study and recreational area for women students and as a meeting place for clubs sponsored by the Department. There is a regulation size swimming pool, 75 x 35 feet equipped with two one-meter diving boards. In the gymnasium, 90 x 50 feet, classes are held in badminton, volleyball, basketball, stunts and tumbling, apparatus and tennis. There are two large backboards used for indoor tennis practice. The adjacent classroom is used for all professional classes and contains audio-visual equipment. The dance studio, used for modern dance classes, is 40 x 60 feet.

In addition to the above areas, there are locker and shower rooms used by those enrolled in physical education and those participating in recreational activities and a small lounge for major students.

**ARMORY.** The Armory is used primarily for an extensive men's intramural program. It houses the offices of the Director of Intramurals and an athletic equipment room from which students may secure equipment for recreational purposes. The 28,800 sq. ft. of floor space has four full length basketball courts, with badminton and volleyball courts superimposed on them. This facility is also used as an indoor track, with an indoor vaulting, high and broad jump pits, a one-tenth mile track, and a 70 yard straightaway.

**COLISEUM.** The Coliseum is used as a supplementary facility for the intramural and required program of physical education for men and women. Included in the facilities are an equipment issue room, adequate shower and locker rooms for both men and women, a classroom, and office space for several of the men's and women's physical education staff.

The 6,555 square feet of floor space is used primarily for required co-educational classes in square and social dance and for intramural basketball. In addition to the one large basketball court, however, there are five badminton and two volleyball courts available for co-ed class instruction.

## OUTDOOR FACILITIES

**THE STADIUM.** The stadium, with a seating capacity of 33,536 has a one-quarter mile cinder track with a 220-yard straightaway. Pits are available for pole vaulting and high and broad jumping. Immediately east of the stadium

are facilities for the shot put, discus and javelin throw. The College of Physical Education, Recreation, and Health use these facilities for required classes in track and field. Also east of the stadium are 13.1 acres devoted to three practice football fields, the baseball stadium, a practice baseball, lacrosse, and soccer field. The College uses these facilities for major skill classes in football, soccer, and baseball. West of the stadium are 11.3 acres devoted entirely to physical education out-door play fields. There are four combination soccer-touch football play fields, with complete goal posts, and four softball fields with wire backstops.

Surrounding the Armory are four touch football fields and eight softball fields, encompassing 18.4 acres. These fields, plus the four in the Fraternity Row horseshoe are used exclusively for intramurals.

Immediately west of the Cole Activities Building are eight all-weather tennis courts. A new modern 18-hole golf course has been opened. This 204-acre course includes two lakes, and an additional 5.8-acre golf driving range for instructional purposes. The golf driving range, equipped with lights, and the golf course greatly adds to our present recreational facilities.

The outdoor facilities adjacent to the Preinkert Field House include 8 hard-surfaced tennis courts, an archery range with space for ten targets, two softball diamonds, and combination hockey and soccer fields.

## Research Laboratory

One of the important aspects of advanced study at the University of Maryland is research. To encourage research, the College of Physical Education, Recreation, and Health makes available to the student a spacious, well equipped research laboratory. Students and faculty alike are encouraged to make use of the laboratory and its facilities for the purpose of conducting their special research projects.

## Cultural and Recreational Opportunities

Near the University of Maryland are found many points of cultural and recreational interest. In Washington, D. C. one may visit national shrines and museums, e.g., the Smithsonian Institute, the Medical Museum, etc., and also attend lectures, musical recitals and stage productions featuring outstanding personages. The Freer Gallery of Art and the Folger Shakespeare Library are located in Washington. Within from one to four hours traveling time by car one finds such points of historical and recreational interest as Mt. Vernon, Gettysburg, Harpers Ferry, Antietam, Annapolis, Monticello, Williamsburg, Jamestown, Yorktown, the Shenandoah Valley, Skyline Drive, Rehobeth Beach and Ocean City, Maryland. A number of Chesapeake Bay beaches and resorts can be reached from the campus within forty-five minutes. The University also makes available for recreational purposes, swimming pools, tennis courts, and similar facilities. During Summer School a special recreational program is conducted for all students; this includes sightseeing tours, group trips to summer stock stage productions, square dancing, musical events, sports tournaments, and movies.

## Undergraduate Professional Curriculums

are fulfilled by professional courses in the College. The normal load for freshman and sophomore men is 19 credits; for women 17 credits. No student may register for more than 19 hours unless he has a "B" average for the preceding semester and approval of the Dean of the College.

### ELECTIVES

Electives should be planned carefully, and well in advance, preferably during the orientation course the first semester, or with the student's academic adviser during the second semester. It is important to begin certain sequences as soon as possible to prevent later conflict. Electives may be selected from any department of the University in accordance with a student's professional needs. Those selected must meet with the approval of the adviser and the Dean of the College.

### TRANSFER STUDENTS

Only students in good standing as to scholarship and conduct are eligible to transfer into this College from another college or university. Only courses applicable to his curriculum and passed with a grade of "C" or better will be transferred. Students wishing to transfer to this College from another college of this University are subject to the general University regulations on this subject, explained in the publication, *University General and Academic Regulations*.

### FRESHMAN AND SOPHOMORE PROGRAMS

The work of the first two years in this College is designed to accomplish the following purposes: (1) provide a general basic or core education and prepare for later specialization by giving a foundation in certain basic sciences; (2) develop competency in those basic techniques of the motor activities necessary for successful participation in the professional courses of the last two years.

While much of the academic course work will be alike, the technique courses will vary considerably in the different curriculums. The core of University requirements should be completed in the first two years in such manner as to justify acceptance as a junior in the desired major. The technique courses must be satisfactorily completed, or competencies demonstrated before the student can be accepted for the advanced courses in methods and in student teaching. It is very important that each requirement be met as it occurs.

### JUNIOR STATUS

Students are permitted to register for courses numbered 100 and above only after they have achieved junior status. Detailed information pertaining to junior status will be found in the *University General and Academic Regulations*.

### STUDENT TEACHING

Opportunity is provided for student teaching experience in Physical Education



or Health Education, or Health and Physical Education. The student devotes eight weeks during either semester of his senior year to observation, participation, and teaching under a qualified supervising teacher in an approved junior or senior high school or in a combined program at the elementary and junior or senior high school levels in the vicinity of the University. The student progresses to gradual assumption of all of the responsibilities of the supervising teacher. A supervisor from the College of Physical Education, Recreation, and Health visits the student periodically and confers with both the student teacher and the supervising teacher, giving assistance when needed. To be eligible for student teaching, the student must have an accumulative point average of 2.3, must have satisfied the competency requirements in P.E. 61, 63, 65, and 67 (men), P.E. 40, 52, 54, 56, 58, 60, 62, 64, 66, 68, 76, and 78 (women), and must have completed the following courses: P.E. 100; P.E. 113 (men); P.E. 114, 116, 124, 126 (women). The student must obtain a grade of "C" or better in all professional courses in his curriculum, and he must register for P.E. 140, P.E. 190 and Ed. 145 concurrently with student teaching. Women must hold one officials rating. Those desiring to teach at the elementary level must have completed P.E. 55, P.E. 120, and P.E. 195.

#### DEGREES

The degree of Bachelor of Science is conferred upon students who have met the conditions of their curricula as herein prescribed by the College of Physical Education, Recreation, and Health, including Air Science and/or physical activities.

Each candidate for a degree must file a formal application with the Office of the Registrar eight weeks prior to the date of graduation.

#### CERTIFICATION

The Maryland State Department of Education certifies for teaching only when an applicant has a tentative appointment to teach in a Maryland county school. No certificate may be secured by application of the student on graduation. Course content requirements for certification are indicated with each curriculum. Certification is specifically limited to graduates who "rank academically in the upper four-fifths of the class and who make a grade of 'C' or better in student teaching." In order to insure the meeting of these requirements, students will not be approved for student teaching except as indicated below. A student intending to qualify as a teacher in Baltimore, Washington, or other specific situations should secure a statement of certification requirements before starting work in the junior year and discuss them with his academic adviser.



# PROFESSIONAL CURRICULUMS

## PHYSICAL EDUCATION

This curriculum prepares students (1) for teaching physical education in the secondary schools, (2) for coaching, and (3) for leadership in youth and adult groups which offer a program of physical activity. The first two years of this curriculum are considered to be an orientation period in which the student has an opportunity to gain an adequate background in general education as well as in those scientific areas closely related to this field of specialization. In addition, there is considerable emphasis placed upon the development of skills in a wide range of motor activities. This basic training makes it possible for the student to select related areas, especially in the fields of biology, health education, and recreation as fields of secondary interest. These materially increase the vocational opportunities which are available to a graduate in physical education.

### EQUIPMENT

Students may be required to provide individual equipment for certain courses.

### UNIFORMS

Suitable uniforms, as prescribed by the College, are required for the activity classes and for student teaching. These uniforms should be worn only during professional activities.

*Men*—During the freshman and sophomore years, men will wear red and black T-shirts, black trunks, white socks, gym shoes, supporter and sweat suit. During the junior year, men will purchase full length black pants with gold braid on side and a black jacket, which are required for student teaching.

*Women*—Tailored blue shorts, white shirt, ankle socks, and tennis shoes, dance leotard and skirt, and warm-up suit.

*For Student Teaching*—An appropriate teaching costume will be selected under the guidance of the supervisor of student teaching before the beginning of the junior year.

## PHYSICAL EDUCATION CURRICULUM FOR MEN

	Semester	
	I	II
<i>Freshman Year *</i>		
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government .....	3	..
Zool. 1—General Zoology .....	..	4
Sp. 7—Public Speaking .....	2	..
P. E. 30—Introduction to Physical Education, Recreation, and Health .....	2	..
P. E. 50—Rhythmic Analysis and Movement .....	1	..
P. E. 59—Skills in Folk, Square and Social Dance.....	..	1
P. E. 61, 63—Sport Skills and Gymnastics .....	2	2
A. S. 1, 2—Basic Air Science .....	2	2
Electives <sup>1</sup> .....	1	7
Total .....	16	19
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Physical Science Group Requirement (Mathematics, Physics or Chemistry) .....	3-4	..
Hea. 40—Personal and Community Health .....	..	3
P. E. 65, 67—Sport Skills and Gymnastics .....	2	2
A. S. 3, 4—Basic Air Science .....	2	2
Electives .....	1	1
Total .....	18-19	18
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development I, II..	3	3
P. E. 77—Methods of Teaching Aquatics .....	..	2
P. E. 100—Kinesiology .....	4	..
P. E. 101, 103—Organization and Officiating in Intramurals..	1	1
P. E. 113, 115—Methods and Materials for Secondary Schools	3	1
P. E. 123 or 125—Coaching Athletics .....	3	..
P. E. 180—Measurement in Physical Education and Health....	..	3
Hea. 50—First Aid and Safety .....	..	1
Electives <sup>2</sup> .....	5	8
Total.....	19	19

\*Students classified in Group 3 on Mathematics Entrance Test must take Math. 0. P. E. 71 may be required, depending upon swimming ability of student.

<sup>1</sup> Students must elect one of the following: Econ. 31, Econ. 37, Phil. 1, Soc. 1, Psych. 1. Students electing Econ. 31 or 37, which cannot be taken before the sophomore year, must register for Hea. 40 the second semester of the freshman year.

<sup>2</sup> Every student in junior or senior year must elect either Hea. 120, P.E. 120, or Rec. 170.

## Physical Education Curriculum

	Semester	
	I	II
<b>Senior Year</b>		
P. E. 140—Curriculum, Instruction and Observation .....	..	3
P. E. 160—Theory of Exercise .....	3	..
P. E. 190—Administration and Supervision of Physical Education, Recreation, and Health .....	..	3
Ed. 145—Principles and Methods of Secondary Education....	..	3
Ed. 148—Student Teaching in Secondary Schools <sup>1</sup> .....	..	8
Electives <sup>2</sup> .....	15	..
Total .....	18	17

## PHYSICAL EDUCATION CURRICULUM FOR WOMEN

<b>Freshman Year *</b>		
Eng. 1, 2—Composition and American Literature.....	3	3
G. & P. 1—American Government .....	3	..
Zool. 1—General Zoology .....	..	4
Sp. 7—Public Speaking .....	2	..
P. E. 30—Introduction to Physical Education, Recreation, and Health .....	2	..
P. E. 40—Basic Body Controls .....	1	..
P. E. 50—Rhythmic Analysis and Movement .....	2	..
P. E. 52—Dance Techniques .....	..	1
P. E. 56—Skills and Methods in Folk and Square Dance....	..	1
P. E. 62, 64—Elementary Techniques of Sports and Gymnastics	2	2
Electives (See Note 3).....	..	5
Total .....	15	16

\*P. E. 72 may be required, depending upon swimming ability of student.

Students classified in Group 3 on Mathematics Entrance Test must take Math. 0.

<sup>1</sup>The qualified student may register for 4 credits of Ed. 148 and 4 credits of Ed. 149 (Student Teaching in Elementary Schools.) When Ed. 148 is scheduled, Ed. 145, P. E. 140, and P. E. 190 must be scheduled concurrently. This may be done either semester.

<sup>2</sup>Every student in junior or senior year must elect either Hea. 120, P. E. 120, or Rec. 170.

<sup>3</sup>Students must elect one of the following: Econ. 31, Econ. 37, Phil. 1, Soc. 1, or Psych. 1. Students electing Econ. 31 or 37, which cannot be taken before the sophomore year, must register for Hea. 40 the second semester of the freshman year.

*Physical Education Curriculum*

	—Semester—	
	I	II
<i>Sophomore Year*</i>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Physical Science Group Requirement (Mathematics, Physics or Chemistry) .....	3-4	..
Hea. 40—Personal and Community Health.....	..	3
P. E. 54—Dance Techniques .....	1	..
P. E. 58—Skills and Methods in Social Dance .....	1	..
P. E. 60—Dance Composition .....	..	2
P. E. 66, 68—Techniques of Sports .....	2	2
Total .....	17-18	17
<i>Junior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development I, II..	3	3
P. E. 78—Methods of Teaching Aquatics.....	..	2
P. E. 82, 84—Officiating <sup>1</sup> .....	0	0
P. E. 100—Kinesiology .....	4	..
P. E. 114, 116—Methods in Physical Education for Secondary Schools .....	3	1
P. E. 124, 126—Practicum in Leadership .....	2	2
P. E. 180—Measurement in Physical Education and Health..	3	..
Hea. 50—First Aid and Safety .....	..	1
Electives <sup>2</sup> .....	..	7
Total .....	15	16
<i>Senior Year</i>		
P. E. 140—Curriculum, Instruction and Observation .....	..	3
P. E. 160—Theory of Exercise .....	3	..
P. E. 190—Administration and Supervision of Physical Education, Recreation, and Health .....	..	3
Ed. 145—Principles and Methods of Secondary Education....	..	3
Ed. 148—Student Teaching in the Secondary Schools <sup>3</sup> .....	..	8
Electives <sup>2</sup> .....	12	..
Total .....	15	17

\*P. E. 74 and/or 76 may be required, depending upon swimming ability of student.

<sup>1</sup>Students must hold one officials rating to be eligible for student teaching.

<sup>2</sup>Every student in junior or senior year must elect either Hea. 120, P. E. 120, or Rec. 170.

<sup>3</sup>The qualified student may register for 4 credits of Ed. 148 and 4 credits of Ed. 149 (Student Teaching in Secondary Schools.) When Ed. 148 is taken, Ed. 145, P. E. 140 and P. E. 190 must be scheduled concurrently. This may be done either semester.

REQUIREMENTS FOR DEGREE IN PHYSICAL EDUCATION

Requirements for the Bachelor of Science degree in physical education in the College of Physical Education, Recreation, and Health are as follows:

<i>Men</i>	<i>Sem. Cr.</i>
Professional Physical Education courses (P.E. 30, 50, 59, 61, 63, 65, 67, 77, 100, 101, 103, 113, 115, 123, or 125, 140, 160, 180, 190)	39
Foundation science courses as prescribed (Zool. 1, 14, 15; Physical Science 3-4 hours)	15-16
Education courses as prescribed	17
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1, Econ. 31, 37, Psych. 1, or Phil. 1; G. & P. 1)	24
Specially prescribed requirements (Sp. 7)	2
University requirements in Basic Air Science	8
Health courses as prescribed (Hea. 40, 50)	4
Electives (must include either P.E. 120; Hea. 120, or Rec. 170)....	27
Total	136-137

<i>Women</i>	
Professional Physical Education courses (P.E. 30, 40, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 78, 82, 84, 100, 114, 116, 124, 126, 140, 160, 180, 190)	45
Foundation science courses as prescribed (Zool. 1, 14, 15; Physical Science 3-4 hours)	15-16
Education courses as prescribed	17
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1, Econ. 31, 37, Psych. 1, or Phil. 1; G. & P. 1)	24
Specially prescribed requirements (Sp. 7)	2
Health courses as prescribed (Hea. 40, 50)	4
Electives (must include either P.E. 120, Hea. 120, or Rec. 170)....	20-21
Total	127-129

MINOR IN PHYSICAL EDUCATION

20 semester hours in physical education and 4 semester hours in cognate areas.

REQUIRED COURSES

Men—P.E. 30; P.E. 61, 63, 65, 67, (2-6\*); P.E. 113; P.E. 101 or 103.  
Women—P.E. 30; P.E. 62, 64, 66, 68 (2-6\*); P.E. 114, 116; P.E. 124, 126.

\* Selection of courses will be made according to student's background.



## ELECTIVE COURSES

Men and Women—P.E. 78, 100; P.E. 123; P.E. 125; P.E. 140; P.E. 160; P.E. 180; P.E. 190; Hea. 110; Hea. 120; Rec. 30; Rec. 40; Rec. 100; Rec. 150; Rec. 170.

If planning to teach, the cognate courses for men should be Hea. 40 and Hea. 50; for women, Hea. 50 and Hea. 120. Men should include P.E. 123 or P.E. 125 if planning to coach.

Note: To be certified to teach in Maryland, 30 semester hours are required in this area, including the following or equivalent: Zool. 14, 15; Hea. 50; P.E. 100, 140; Ed. 145 and Ed. 148 including at least 25 hours of student teaching.

## MINOR IN ELEMENTARY SCHOOL PHYSICAL EDUCATION

There are two plans for a minor in elementary school physical education. Plan A is for students in the College of Physical Education, Recreation, and Health, and Plan B is for students outside the College of Physical Education, Recreation, and Health.

### I. Plan A (For students in this College)

10 semester hours in elementary school physical education courses and 10 hours in cognate areas.

#### *Required courses*

P.E. 55, 57, 120, 195; Ed. 123 or Ed. 2, Section 1.

#### *Elective courses*

10 hours in any of the following cognate areas: human development, elementary education, biological science, health education. (Not more than 6 hours shall be taken in any one cognate area.)

#### *Student teaching*

Students will be required to do 4 weeks of their 8 weeks student teaching at the elementary school level in physical education. (Ed. 149).

### II. Plan B (For students outside this College)

13 semester hours in elementary school physical education courses and 10 hours in cognate areas.

#### *Required courses*

P.E. 55, 57, 120, 130, 195.

#### *Elective courses*

10 hours in any of the following cognate areas: human development, elementary education, biological science, health education. (Not more than 6 hours shall be taken in any one cognate area.)

RELATED FIELDS MINOR

This minor requires a minimum of 18 credit hours to be elected from any three of the four following areas:

- I. Health Education—6 hours
  - a. Hea. 120—Methods and Materials in Health Education.
  - b. Hea. 150—Health Problems of Children and Youth.
- II. Recreation—6 hours
  - a. Rec. 120—Program Planning
  - b. Rec. 170—General Fundamentals of Recreation
- III. Safety Education—6 hours
  - a. Hea. 70—Safety Education
  - b. Hea. 80—The Driver, His Characteristics and Improvement
- IV. Dance—6 hours \*
  - a. P.E. 55
  - b. P.E. 54, 70, 80
  - c. P.E. 56, 58, 59
  - d. P.E. 50, 192

DANCE

With the increasing recognition of the importance and scope of dance in educational programs, the need for teachers adequately trained in dance far exceeds the number available. The professional curriculum in dance is constructed to meet the steadily rising demand for personnel qualified to teach dance in college, secondary, elementary schools, in camps, recreational agencies and in preparation for dance therapy.

The course of study provides general background knowledge in culture and foundation sciences as well as particularization in dance skills, theory and philosophy. Courses in music theory, acting and stagecraft answer additional needs for dance production planning. Students are urged to enrich their background in an interchange in creative arts in other departments of the University, and opportunity is given to serve as assistants in the non-professional program.

Through electives the program may be adapted to meet the interests of the particular student, combining dance with fine arts, physical education, recreation, theatre, speech therapy, nursery school-kindergarten education, psychology, elementary education.

The majors in dance have performance opportunities in the Dance Group which presents one major concert each year, and the Demonstration Group which performs on and off campus.

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\*Selection of courses will be made according to student's background and interests upon consultation with the dance adviser.

Additional dance experience is available in nearby Washington for the student who may wish to visit professional studios. Many opportunities are provided for students to meet outstanding artists in the field and to take part in symposia and workshops both on campus and in Washington. The proximity of Washington and the availability of the embassies affords many unique cultural experiences.

Appropriate adjustments will be made in the curriculum for men who wish to pursue a major in dance.

## DANCE CURRICULUM

	Semester	
	I	II
<i>Freshman Year *</i>		
Eng. 1, 2—Composition and American Literature .....	3	3
G. & P. 1—American Government .....	3	..
Zool. 1—General Zoology .....	..	4
Sp. 8—Acting .....	3	..
P. E. 30—Introduction to Physical Education, Recreation, and Health .....	2	..
P. E. 40—Basic Body Controls .....	1	..
P. E. 50—Rhythmic Analysis and Movement .....	1-2	..
P. E. 52—Dance Techniques .....	..	1
P. E. 56, 58—Folk, Square, Social Dance .....	1	1
P. E. 62—Elementary Techniques of Sports .....	2	..
Hea. 40—Personal and Community Health .....	..	3
Electives <sup>1</sup> .....	..	3-6
Total .....	16-17	15-18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature or .....	3	3
Eng. 5, 6—Composition and English Literature.		
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Pr. Art 1—Design .....	3	..
P. E. 54—Dance Techniques .....	1	..
P. E. 60—Dance Composition .....	..	2
Hea. 50—First Aid and Safety .....	..	1
Music 20—Survey of Music Literature; and		
Music 7—Theory of Music .....	3	3
Electives <sup>1</sup> .....	..	0-3
Total .....	17	16-19

\*P. E. 72 may be required, depending on the swimming ability of the student.

<sup>1</sup>Students must elect, in either the freshman or sophomore year, one of the following: Econ. 31, Econ. 37, Phil. 1, Soc. 1, Psych. 1. Economics may be taken in the sophomore year only.

## Dance Curriculum

	Semester	
	I	II
<i>Junior Year</i>		
P. E. 70, 80—Intermediate and Advanced Dance.....	2	2
P. E. 100—Kinesiology .....	4	..
P. E. 114—Methods in Physical Education for Secondary Schools .....	3	..
P. E. 126—Practicum in Leadership .....	..	2
P. E. 182—History of Dance .....	3	..
P. E. 192—Percussion Accompaniment & Music for Dance ..	..	2
Sp. 14, 15—Stagecraft .....	3	3
Phil. 153—Philosophy of Art .....	..	3
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
Electives* .....	..	0-3
Total .....	18	15-18
<i>Senior Year</i>		
P. E. 110—Dance Production .....	3	..
P. E. 140—Curriculum, Instruction and Observation .....	..	3
P. E. 184—Philosophy & Theory of Dance .....	3	..
P. E. 190—Administration and Supervision of Physical Educa- tion, Recreation, and Health .....	..	3
Ed. 145—Principles and Methods of Secondary Education....	..	3
Ed. 148—Student Teaching in the Secondary Schools <sup>1</sup> .....	..	8
Electives* .....	12	..
Total .....	18	17

### REQUIREMENTS FOR DEGREE IN DANCE \*

Requirements for the Bachelor of Science degree in physical education, with a major in dance are as follows:

College dance courses (P.E. 50, 52, 54, 56, 58, 60, 70, 80, 110, 126, 182, 184, 192) .....	24
Prescribed courses in related areas (P.E. 30, 40, 62, 100, 114, 140, 190; Music 7, 20; Sp. 8, 14, 15; Phil. 153; Pr. Art 1).....	40
Prescribed Health Courses (Hea. 40, 50) .....	4
General requirements (Eng. 1, 2, 3, 4, or 5, 6; H. 5, 6; Soc. 1, Psych. 1, Econ. 31, 37 or Phil. 1; G. & P. 1) .....	24
Foundation Science Courses (Zool. 1, 14, 15) .....	12
Education courses as prescribed .....	17
Electives .....	11-21
Total .....	132-142

\*P. E. 90 Workshop 1-6 credits required of dance majors.

<sup>1</sup> When Ed. 148 is taken Ed. 145, P. E. 140, P. E. 190 must be scheduled concurrently. This may be done either semester.

## MINOR IN DANCE

The minor in dance is adapted to meet the needs of students majoring in such areas as speech, music, art, nursery school-kindergarten education, psychology, elementary education, recreation, and physical education. Other combinations may be considered depending on the student's interest and background.

The minor shall consist of a significant group of courses totalling twenty semester hours. The required courses in the dance area will be chosen from the following: Skills in Modern Dance, P.E. 52, 54, 70, 80 (Beginning through Advanced); P.E. 56, 58, 55, Skills and Methods in Social, Folk and Square Dance, Elementary School Rhythmic Activities; P.E. 60, Composition and Methods; P.E. 50, Rhythmic Analysis and Movement; P.E. 110, Dance Production; P.E. 182, History of Dance; P.E. 192, Percussion and Music for Dance. Electives shall be selected from cognate areas depending on the student's major. All programs must be approved by the department adviser.

## SUGGESTED MINORS FOR THE DANCE MAJOR

Music, physical education, recreation, split sociology-psychology, speech, and split recreation-sociology.

## RECREATION

The increased amount of leisure time existent in our society because of the rapid development of modern civilization, and the imperative need for guidance in the wise use of that leisure time has made us cognizant of the need for trained recreation leaders.

This curriculum, therefore, is designed to meet the needs of students who wish to qualify for the many positions in the field of recreation, and the needs of those students who desire a background of culture and skills which will enable them to render distinct contributions to community life. The College draws upon various other departments and colleges within the University for courses to balance and enrich its offerings for its recreation major students.

Majors in recreation also have opportunity for observation and practical experiences in local recreation and agency programs, in those programs of metropolitan Washington and Baltimore, and in various programs of the Armed Forces.

## RECREATION CURRICULUM FOR MEN

<i>Freshman Year</i>	<i>(Semester)</i>	
	<i>I</i>	<i>II</i>
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man <sup>1</sup> .....	3	..
G. & P. 1—American Government .....	..	3
Sp. 1—Public Speaking .....	..	3

<sup>1</sup> Econ. 31 or 37 may be substituted for Phil. 1 or Soc. 1 but may not be taken until the sophomore year.



	Semester	
	I	II
<i>Freshman Year (continued)</i>		
Sp. 4—Voice and Diction .....	3	..
Zool. 1—General Zoology .....	..	4
P. E. 30—Introduction to Physical Education, Recreation, and Health .....	2	..
P. E. 50—Rhythmic Analysis and Movement .....	1	..
P. E. 59—Skills in Folk, Square, and Social Dance .....	..	1
P. E. 61, 63, 65, or 67—Sport Skills and Gymnastics <sup>1</sup> ....	2	2
Rec. 10—Recreation Orientation .....	0	0
A. S. 1, 2—Basic Air Science .....	2	2
Electives .....	1	1
Total .....	17	18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Sp. 10—Group Discussion .....	..	2
Zool. 14—Human Anatomy and Physiology (or Bot. 1—General Botany) .....	4	..
Hea. 50—First Aid and Safety .....	..	1
Pr. Art 1—Design.....	3	..
Hea. 40—Personal and Community Health .....	..	3
Rec. 30—History and Introduction to Recreation .....	2	..
Rec. 40—Camp Counseling (or Rec. 150—Camp Management if experienced) .....	..	2-3
A. S. 3, 4—Basic Air Science .....	2	2
Electives .....	1	2-3
Total .....	18	18-20
<i>Junior Year</i>		
Basic Academic Sequence <sup>2</sup> (9 hours).....	3	6
Cr. 2—Simple Crafts .....	2	..
Music 16—Music Fundamentals for the Classroom Teacher...	3	..
P. E. 113—Methods and Materials for Secondary Schools....	3	..
Rec. 100—Co-recreational Games and Programs .....	..	2
Rec. 110—Nature Lore .....	..	2
Rec. 120—Program Planning .....	3	..
Soc. 2—Principles of Sociology .....	..	3
Psych. 1—Introduction to Psychology .....	..	3
Electives .....	2	2
Total .....	16	18

<sup>1</sup> Choice of activities depends upon student's background and interest.

<sup>2</sup> The basic sequence encourages a student to pursue his minor in academic fields, possibly sociology-psychology.

	—Semester—	
	I	II
<i>Senior Year</i>		
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
P. E. 101—Organization and Officiating in Intramurals....	1	..
Rec. 140—Observation and Field Work in Recreation .....	..	5
Rec. 180—Leadership Techniques and Practices .....	3	..
Rec. 190—Organization and Administration of Recreation....	..	3
Soc. 118—Community Organization .....	..	3
Sp. 113—Play Production .....	..	3
Electives .....	9	1-2
Total .....	16	18

## RECREATION CURRICULUM FOR WOMEN

<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life or Phil. 1—Philosophy for Modern Man <sup>1</sup> .....	3	..
G. & P. 1—American Government .....	3	..
Sp. 1—Public Speaking .....	..	3
Sp. 4—Voice and Diction .....	3	..
Zool. 1—General Zoology .....	..	4
Hea. 40—Personal and Community Health .....	..	3
P. E. 30—Introduction to Physical Education, Recreation, and Health .....	2	..
P. E. 40—Basic Body Controls .....	1	..
P. E. 50—Rhythmic Analysis and Movement .....	1	..
P. E. 52—Modern Dance .....	..	1
P. E. 56, 58—Skills and Methods in Folk and Square Dance, Skills and Methods in Social Dance .....	1	1
P. E. 62, 64, 66 or 68—Elementary Techniques of Sports and Gymnastics <sup>2</sup> .....	2	or 2
Rec. 10—Recreation Orientation .....	0	0
Total .....	17-19	15-17

<sup>1</sup>Econ. 31 or Econ. 37 may be substituted for Phil. 1 or Soc. 1 but may not be taken until the sophomore year.

<sup>2</sup>Choice of activities depends upon students background and interest.

## Recreation Curriculum

	Semester	
	I	II
<b>Sophomore Year</b>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Sp. 10—Group Discussion .....	..	2
Hea. 50—First Aid and Safety .....	..	1
P. E. 62, 64, 66 or 68—Elementary Techniques of Sports and Gymnastics <sup>1</sup> .....	2	or 2
P. E. 72, 74, 76 or 78—Elementary, Intermediate and Ad- vanced Swimming and Diving; Methods of Aquatics (see Note) .....	1-2	or 1-2
Pr. Art 1—Design .....	3	..
Psych. 1—Introduction to Psychology .....	..	3
Rec. 30—History and Introduction to Recreation .....	2	..
Rec. 40—Camp Counseling (or Rec. 150—Camp Management if experienced) .....	..	2-3
Zool. 14—Human Anatomy and Physiology (or Bot. 1—General Botany) .....	4	..
Total .....	15-19	14-19
<b>Junior Year</b>		
Basic Academic Sequence <sup>2</sup> (9 hours).....	3	6
Cr. 2—Simple Crafts .....	2	..
Music 16—Music Fundamentals for the Classroom Teacher....	3	..
P. E. 114—Methods in Physical Education for Secondary Schools .....	3	..
Rec. 100—Co-recreational Games and Programs .....	2	..
Rec. 110—Nature Lore .....	..	2
Rec. 120—Program Planning .....	3	..
Soc. 2—Principles of Sociology .....	3	..
Sp. 113—Play Production .....	..	3
Electives .....	..	3
Total .....	19	14
<b>Senior Year</b>		
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
Rec. 140—Observation and Field Work in Recreation .....	..	5
Rec. 180—Leadership Techniques and Practices.....	3	..
Rec. 190—Organization and Administration of Recreation....	..	3
Soc. 118—Community Organization .....	..	3
Electives .....	9	2
Total .....	15	16

<sup>1</sup> Choice of activities depends upon student's background and interest.

<sup>2</sup> The basic academic sequence encourages a student to pursue his minor in academic fields, possibly sociology-psychology.

## REQUIREMENTS FOR DEGREE IN RECREATION

Requirements for the Bachelor of Science degree in recreation in the College of Physical Education, Recreation, and Health are as follows:

*Men*

College recreation courses (Rec. 10, 30, 40, 100, 110, 120, 140, 180, 190) .....	22
Prescribed courses in related areas (H. D. Ed. 100, 101; Cr. 2; Music 16; P.E. 30, 50, 59, (61, 63, 65, 67; any two), 101, 113; Pr. Art 1; Psych. 1; Soc. 2, 118; Sp. 1, 4, 10, 113).....	47
Prescribed Health courses (Hea. 40, 50) .....	4
Prescribed foundation science courses (Zool. 1, 14) .....	8
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37; Phil. 1; G. & P. 1) .....	24
Basic academic sequence .....	9
University requirements in Basic Air Science .....	8
Electives .....	17
<b>Total</b> .....	<b>140</b>

*Women*

College recreation courses (Rec. 10, 30, 40, 100, 110, 120, 140, 180, 190) .....	22
Prescribed courses in related areas (H. D. Ed. 100, 101, Cr. 2; Music 16; P.E. 30, 40, 50, 56, 58 (62, 64, 66, 68; any two, 72, 74, 76 or 78), 114; Pr. Art 1; Psych. 1; Soc. 2, 118; Sp. 1, 4, 10, 113 .....	49
Prescribed Health courses (Hea. 40, 50) .....	4
Prescribed foundation science courses (Zool. 1, 14) .....	8
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37; Phil. 1; G. & P. 1) .....	24
Basic academic sequence.....	9
Electives .....	17
<b>Total</b> .....	<b>133</b>

## MINOR IN RECREATION

18 semester hours in recreation and 6 semester hours in cognate areas.

## REQUIRED COURSES

- 10 hours in Rec. 30, 40, 120, 150, 170, 180, or 190; Rec. 100; Soc. 118.  
 6 hours of work in areas of the recreational skills—nature, arts and crafts, speech and dramatics—but *not* in the area of the student's major.  
 2 hours of work in the areas of swimming, sports and dance skills; (men)—P.E. 50, 59, 61, 63, 65, 67; (women)—P.E. 40, 50, 52, 54, 56, 58, 62, 64, 66, 68, 72, 74, 76, 78.  
 OR other courses approved by the student's adviser and the various departments involved, depending upon the student's interest and background.

## ELECTIVE COURSES

- 6 hours in cognate areas of sociology, psychology, etc., on approval of the student's adviser.

## RECOMMENDED ELECTIVE COURSES

- Art 100, 101; C. Ed. 115, 116; Cr. 3, 5, 20, 21, 30, 31, 40, 41; Ed. 52, 147; Ind. Ed. 2, 9; Journ. 10; Music 1, 4, 5, 10, 15, 50; P.E. 180; Pr. Art 38 or 39; Psych. 121, 125, 126; R. Ed. 114; Soc. 13, 14, 62, 113, 131, 153; Sp. 102, 129.

## HEALTH EDUCATION

This curriculum is designed to prepare the student to give leadership in the development of the school health education program including (1) health services (2) healthful environment, and (3) health teaching. Graduates in this area have placement opportunities in schools, colleges, and in public and private health agencies. The minor is planned to be particularly suitable for students who are majoring in physical education, education, home economics, and childhood education.

## HEALTH EDUCATION CURRICULUM FOR MEN

<i>Freshman Year</i>	—Semester—	
	I	II
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life .....	3	..
G. & P. 1—American Government .....	..	3
Zool. 1—General Zoology .....	..	4
Sp. 7—Public Speaking .....	2	..
Hea. 10—Orientation to Health Education .....	..	1
Hea. 30—Introduction to Physical Education, Rec., & Health	2	..
P. E. 1—Orientation to Physical Education .....	1	..
P. E. 3—Developmental and Combative Sports .....	..	1
Chem. 11, 13—General Chemistry .....	3	3
A. S. 1, 2—Basic Air Science .....	2	2
Electives .....	1	1
Total .....	17	18



	Semester	
	I	II
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Hea. 40—Personal and Community Health .....	3	..
Hea. 50—First Aid and Safety .....	..	1
Hea. 70—Safety Education .....	..	3
P. E. 5—Team Sports and Aquatics .....	1	..
P. E. 7—Recreational Activities .....	..	1
A. S. 3, 4—Basic Air Science .....	2	2
Electives .....	3	1
Total .....	19	18
<i>Junior Year</i>		
Microb. 1—General Microbiology .....	4	..
Microb. 108—Epidemiology and Public Health.....	..	2
Nut. 10—Elements of Nutrition .....	..	3
Ed. 150—Educational Measurement or		
Hea. 180—Measurement in Physical Education and Health	2-3	..
Hea. 110—Introduction to School Health Education .....	2	..
Hea. 120—Methods & Materials in Health Education .....	..	3
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
Psych. 1—Introduction to Psychology .....	3	..
Psych. 5—Mental Hygiene .....	..	3
Electives .....	3	4
Total .....	17-18	18
<i>Senior Year</i>		
Hea. 140—Curriculum, Instruction & Observation .....	3	..
Hea. 150—Health Problems of the School Child .....	..	3
Hea. 190—Administration and Supervision of School Health		
Education .....	3	..
Ed. 145—Principles and Methods of Secondary Education ....	3	..
Ed. 148—Student Teaching in the Secondary Schools <sup>1</sup> .....	8	..
Electives .....	..	14
Total .....	17	17

<sup>1</sup> When Ed. 148 is taken, Ed. 145, Hea. 140 and Hea. 190 must be scheduled concurrently. This may be done either semester.

# Health Education Curriculum

## HEALTH EDUCATION CURRICULUM FOR WOMEN

	—Semester—	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature .....	3	3
Soc. 1—Sociology of American Life .....	3	..
G. & P. 1—American Government .....	..	3
Zool. 1—General Zoology .....	..	4
Sp. 7—Public Speaking .....	2	..
Hea. 10—Orientation to Health Education .....	..	1
Hea. 30—Introduction to Physical Education, Rec., & Health	2	..
P. E. 2, 4—Orientation Activities, Swimming .....	1	1
Chem. 11, 13—General Chemistry .....	3	3
Electives .....	3	3
Total .....	17	18
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature .....	3	3
H. 5, 6—History of American Civilization .....	3	3
Zool. 14, 15—Human Anatomy and Physiology .....	4	4
Hea. 40—Personal and Community Health .....	3	..
Hea. 50—First Aid and Safety .....	..	1
Hea. 70—Safety Education .....	..	3
P. E. 6, 8—Dance, Sports .....	1	1
Electives .....	3	3
Total .....	17	18
<i>Junior Year</i>		
Microb. 1—General Microbiology .....	4	..
Microb. 108—Epidemiology and Public Health.....	..	2
Nut. 10—Elements of Nutrition .....	..	3
Ed. 150—Educational Measurement or		
Hea. 180—Measurement in Physical Education and Health	2-3	..
Hea. 110—Introduction to School Health Education .....	2	..
Hea. 120—Methods & Materials in Health Education .....	..	3
H. D. Ed. 100, 101—Principles of Human Development I, II	3	3
Psych. 1—Introduction to Psychology .....	3	..
Psych. 5—Mental Hygiene .....	..	3
Electives .....	3	4
Total .....	17-18	18

Senior Year	Semester	
	I	II
Hea. 140—Curriculum, Instruction & Observation .....	3	..
Hea. 150—Health Problems of the School Child .....	..	3
Hea. 190—Administration and Supervision of School Health Education .....	3	..
Ed. 145—Principles of High School Teaching .....	3	..
Ed. 148—Student Teaching in the Secondary Schools <sup>1</sup> .....	8	..
Electives .....	..	14
Total .....	17	17

# REQUIREMENTS FOR DEGREE IN HEALTH EDUCATION

Requirements for the Bachelor of Science degree in health education in the College of Physical Education, Recreation, and Health are as follows:

Men	Sem. Cr.
Foundation science courses (Zool. 1, 14, 15; Microb. 1, 108; Chem. 11, 13) .....	24
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37, or Phil. 1; G. & P. 1) .....	24
Other specified requirements (Sp. 7; Psych. 1, 5; Nut. 10).....	11
Professional Health Education courses (Hea. 10, 30, 40, 50, 70, 110, 120, 140, 150; Ed. 150, or Hea. 180; Hea. 190) .....	29
Education courses (H. D. Ed. 100, 101; Ed. 145, 148) .....	17
University requirements in Basic Air Science .....	8
University requirements in physical activity (P.E. 1, 3, 5, 7).....	4
Electives .....	21
Total .....	138

Women	
Foundation science courses (Zool. 1, 14, 15; Microb. 1, 108; Chem. 11, 13) .....	24
General requirements (Eng. 1, 2, 3, 4; H. 5, 6; Soc. 1; Econ. 31, 37, or Phil. 1; G. & P. 1) .....	24
Other specified requirements (Sp. 7; Psych. 1, 5; Nut. 10).....	11
Professional Health Education courses (Hea. 10, 30, 40, 50, 70, 110, 120, 140, 150; Ed. 150, or Hea. 180; Hea. 190) .....	29
Education courses (H. D. Ed. 100, 101; Ed. 145, 148) .....	17
University requirements in physical activity (P.E. 2, 4, 6, 8).....	4
Electives .....	21
Total .....	130

<sup>1</sup> When Ed. 148 is taken Ed. 145, Hea. 140 and Hea. 190 must be scheduled concurrently. This may be done either semester.

#### MINOR IN HEALTH EDUCATION

12 semester hours in health education and 12 semester hours in related areas.

#### REQUIRED COURSES

Hea. 2 and /or 4 or Hea. 40 (women); Hea. 40 (men); Hea. 50 (1), Hea. 110 (2), Hea. 120 (3) and Hea. 150 (3).

#### ELECTIVE COURSES IN RELATED AREAS

6 semester hours of biological sciences and 6 semester hours of psychology or human development.

#### MINOR IN SAFETY EDUCATION

Students wishing to obtain a minor in safety education and become certified to teach Safety and Driver Education in junior and senior high schools should take the following courses: Hea. 50 (1), Hea. 60 (2), Hea. 70 (3), Hea. 80 (3), Hea. 105 (3), and Hea. 145 (3); F. P. 104 (3), 105 (3).

### MINORS IN OTHER AREAS

It is relatively easy for any student majoring in one curriculum of this College to complete the requirements for a minor in a cognate area of the College, as indicated after each major curriculum. Those who plan to teach in the public schools might wish to also qualify in an academic area. This is more difficult with the limited number of elective credits and must be planned carefully in advance. If it seems advisable, the Dean may waive certain required courses to allow development of a needed minor, or the student may be able to carry a heavier load than normal if his grade average permits.

Students majoring in physical education or health education should begin preparing for a teaching minor in a subject matter area during the sophomore year, if possible. Many opportunities exist in junior and senior high schools for a combination teacher of physical education and/or coach and a teacher of science, mathematics, history, etc. For a teaching minor, Ed. 140 should be taken in the minor field and student teaching should be split between the major and minor fields.

#### ENGLISH MINOR

A minor in English requires 26 semester hours. It includes 12 semester hours of composition and literature, 3 semester hours of advanced American literature, and 11 hours of electives. Electives must be chosen with the approval of the adviser and with the recommendations of the English Department.

## MATHEMATICS MINOR

For minor in this area, 20 semester hours are required including the following courses: Math. 2—Solid Geometry (2); Math. 18, 19—Elementary Mathematical Analysis (5, 5), and Math. 20, 21—Calculus (4, 4). Students who have had solid geometry in high school or who pass satisfactorily an examination in this subject need not take Math. 2. Electives in mathematics are selected with the advice of the adviser.

## SOCIAL SCIENCE MINOR

For a minor in this group, 24 semester hours are required as follows: History, 18 semester hours (including one year each of American and European history), economics, sociology, government, consumer education or geography, 6 semester hours.

## SCIENCE MINORS

- A. General Science: 30 semester hours are required for a minor in general science including the following courses: Chem. 1, 3, General Chemistry (4, 4); Zool. 1, General Zoology (4); Bot. 1, General Botany (4); Phys. 1, 2, Elements of Physics (3, 3) or Phys. 10, 11, Fundamentals of Physics (4, 4). The remaining 6 or 8 semester hours will be chosen subject to the approval of the student's major adviser and of the science department in which his interest lies. Zool. 14 and 15 (4, 4) are approved courses.
- B. Biological Minor: 20 semester hours are required for a biological minor and will include the following courses: Zool. 1, General Zoology (4), Zool. 14, and 15, Human Anatomy and Human Physiology (4, 4); Chem. 1, General Chemistry (4); Bot. 1, General Botany (4).
- C. Minors of 20 semester hours are also offered in chemistry and physics. A minor in physics must be supported by a one-year course in chemistry. A minor in chemistry must be supported by a one-year course in physics. Other courses will be chosen subject to the approval of the student's major adviser and the science department in which the student's interest lies.

## SPEECH MINOR

A minor of 22 semester hours is offered in speech. The minimum requirements for this minor are 12 semester hours in addition to the 10 semester hours of departmental requirements in Speech 1, 2, 3, and 4. The 12 semester hours above the departmental requirements must include 6 semester hours of courses numbered 100 or higher. All programs for minors must be approved by the departmental adviser.



## PHYSICAL THERAPY

This course of study as offered by the University of Maryland is approved by the Council on Medical Education and Hospitals of the American Medical Association and prepares the student to meet the qualifications for licensure of physical therapists.

The first two years of the curriculum are planned as studies in liberal arts and specific sciences, which are basic for courses taken in the last two years of specialization. The freshman and sophomore years are taken on the campus of the University of Maryland at College Park. The junior and senior years are taken on the campus of the University of Maryland at Baltimore, Department of Physical Therapy, School of Medicine. After completion of the senior year three additional months of supervised clinical experience are necessary in order to meet the national requirements for accreditation in this specialty. Upon the satisfactory fulfillment of the four year course a Bachelor of Science degree is awarded by the College of Physical Education, Recreation, and Health. At the satisfactory completion of the required months of clinical experience a Certificate of Proficiency in Physical Therapy is granted by the School of Medicine. For more detailed information, write to the Educational Administrator of the Physical Therapy Curriculum, School of Medicine, University of Maryland, Baltimore 1, Maryland.

### FRESHMAN AND SOPHOMORE PROGRAM—COLLEGE PARK CAMPUS

	(Semester—)	
	I	II
<i>Freshman Year</i>		
Eng. 1, 2—Composition and American Literature .....	3	3
Chem. 1, 3—General Chemistry .....	4	4
Zool. 1, 2—General Zoology and Advanced Zoology .....	4	4
Math. 10, 11—Algebra, Trigonometry and Analytical Geometry .....	3	3
Sp. 7, 10—Public Speaking, Group Discussion.....	2	2
A. S. 1, 2—Basic Air Science .....	2	2
P. T. 10, 11—Physical Therapy Orientation .....	0	0
Physical Activities .....	1	1
Electives .....	1-3	1-3
	—	—
Total .....	20	20
<i>Sophomore Year</i>		
Eng. 3, 4—Composition and World Literature .....	3	3
Phys. 10, 11—Fundamentals of Physics.....	4	4
Zool. 20—Vertebrate Embryology .....	..	4
G. & P. 1—American Government .....	3	..
Psych. 1—Introduction to Psychology .....	3	..
Soc. 1—Sociology of American Life <sup>1</sup> .....	..	3
A. S. 3, 4—Basic Air Science .....	2	2
P. T. 20, 21—Foundations of Physical Therapy .....	1	1
Physical Activities .....	1	1
Electives .....	1-3	1-3
	—	—
Total .....	18	19

<sup>1</sup> May substitute Phil. 1, Econ. 31, or Econ. 37.

## JUNIOR AND SENIOR PROGRAM—BALTIMORE CAMPUS

	Semester	
	I	II
<i>Junior Year</i>		
Physiol. 22—General Human Physiology .....	..	5
Anat. 103 (a) & (b)—Human Anatomy .....	5½	3
Path. 105—Pathology .....	..	2
P. T. 106 (a) & (b)—Professional Relations, Ethics and Clinical Observation .....	½	½
P. T. 107, 108—Physical Therapy Theory and Technique I & II .....	2½	1½
P. T. 110 (a) & (b)—Principles of Physical Therapy Applied to Medical and Surgical Conditions .....	1½	1
P. T. 155—Nursing Procedures Related to Physical Therapy..	1½	..
H. 5, 6—History of American Civilization .....	3	3
Ed. 90—Development and Learning .....	3	..
Psych. 5—Mental Hygiene .....	..	3
Total .....	17½	19

*Senior Year*

Psych. 161—Psychology of the Handicapped .....	1	..
P. T. 102—Physiology of Exercise .....	1	..
P. T. 104—Functional Anatomy .....	2½	..
P. T. 151—Therapeutic Exercise .....	5	..
P. T. 152—Rehabilitation .....	..	3
P. T. 153—Physical Therapy Theory and Technique III ....	3	..
P. T. 154—Interprofessional and Social Agencies Correlation	..	1
P. T. 156—Current Literature .....	..	1
P. T. 157—Administration and Clinical Observation .....	..	1
P. T. 158 (a) & (b)—Clinical Experience .....	1	5
P. T. 160 (a) & (b)—Principles of Physical Therapy Applied to Medical and Surgical Conditions .....	3	2
Total .....	16½	13
Clinical Experience—11 weeks, June, July and August		

## REQUIREMENTS FOR DEGREE IN PHYSICAL THERAPY

Requirements for the Bachelor of Science degree in the College of Physical Education, Recreation, and Health, major in physical therapy, are as follows:

<i>Freshman and Sophomore Program—College Park Campus</i>	Sem.	Cr.
Biological Science Courses (Zool. 1, 2, 20).....		12
Physical Science Courses (Chem. 1, 3; Phys. 10, 11) .....		16
Mathematics Courses (Math. 10, 11).....		6
Social Science Courses (Soc. 1 or Phil. 1 or Econ. 31 or Econ. 37; G. & P. 1; Psych. 1).....		9
English Courses (Eng. 1, 2, 3, 4).....		12

## *Physical Therapy Curriculum*

Physical Education Courses.....	4
Speech Courses (Sp. 7, 10).....	4
Air Science Courses (A.S. 1, 2, 3, 4) Required of men.....	8
Professional Courses (P. T. 10, 11, 20, 21).....	2
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Total .....	73

### *Junior and Senior Program—Baltimore Campus*

Biological Science Courses (Anat. 103; Physiol. 22).....	13½
Medical Science Courses (Path. 105).....	2
Social Science Courses (H. 5, 6; Psych. 5, 161).....	10
Education Courses (Ed. 90).....	3
Professional Courses (P. T. 102, 104, 106, 107, 108, 110, 151, 152, 153, 154, 155, 156, 157, 158, 160).....	37½
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Total .....	66
Grand Total .....	139

## GRADUATE STUDY

The College of Physical Education, Recreation, and Health offers course work in the areas of physical education, recreation and health education leading to the degrees of Master of Arts, Doctor of Education, and Doctor of Philosophy. Persons not interested in an advanced degree may take course work for purposes of teaching certification, renewal of certification, or professional growth. Within the three major areas—physical education, recreation, and health education—special study and research are available along the following lines: (1) Physical Education—elementary, secondary, higher education and research, administration, athletics, and dance; (2) Recreation—public and municipal, industrial, hospital, service organizations and agencies, outdoor education, camp administration, and higher education and research; (3) Health Education—elementary, secondary, higher education and research, safety education, and service organizations and agencies.

### SPECIAL STUDY

Graduate students are encouraged to pursue advanced study along lines of their special interests. The wealth of research sources close to the University make such study possible. In addition, the College of Physical Education, Recreation, and Health places at the disposal of graduate students a modern, spacious, well-equipped research laboratory.

### GENERAL REGULATIONS GOVERNING GRADUATE WORK

Persons wishing to pursue graduate study must first gain admittance to the Graduate School. Application blanks for this purpose can be obtained by writing to the Dean of the Graduate School. Admittance to Graduate School entitles one to enroll in courses numbered 200 and above and to pursue course work leading to an advanced degree. Courses numbered 200 or above are graduate courses whereas courses numbered from 100 to 199 are advanced undergraduate and graduate courses. Persons not admitted to the Graduate School may enroll as special students in courses numbered under 200. To be admitted for graduate study the applicant must:

- (1) be a graduate of an accredited college or university
- (2) have a "B" average or its equivalent in the major and related course work during the last two years of undergraduate work, or have demonstrated either at the University of Maryland or some other accredited institution the capacity to do graduate level work, and
- (3) have the necessary prerequisite course work with a minimum of 16 semester credit hours in the subject field in which the applicant wishes to specialize.

### MASTER OF ARTS DEGREE

The Master of Arts degree is awarded for successful completion of a minimum of 30 hours of advanced study beyond the undergraduate level. The Master's

degree represents more than mere class attendance. It represents professional competency and the demonstrated ability to do critical thinking.

The student seeking the Master of Arts degree must declare a major subject field and a minor subject field. Twelve to fifteen credit hours will be in the major area and nine to twelve hours, depending upon the number in the major area, will be in the minor field. The remaining six hours are made available to the student in order that he may study, relatively intensely, any problem or topic in which he has a *special* interest. This study culminates in a written report—thesis.

The program for the Master's degree is relatively flexible with only three courses, a total of nine credit hours, being required. All other course work is elective. The student in conjunction with an adviser works out a program of study fitting the student's special needs and interests. Early in the graduate program, before twelve credit hours are completed, the student is asked to take the qualifying examination. The purpose of this is to help the student and adviser to discover areas of strength and weakness. This provides information needed in planning the course of study. Upon completion of all course work, including the research project, the candidate undergoes a final oral examination which is directed primarily toward the student's research and reported findings.

Half-time graduate assistants working toward the Master's Degree should note that they may take only ten credit hours per semester during the fall and spring terms and six credit hours in Summer School. Consequently, a graduate assistant in order to obtain the Master's degree, must attend the University three full semesters; or two semesters and a summer session, and carry out part of the research project in absentia.

#### THE DOCTOR OF EDUCATION DEGREE

The Doctor of Education degree is a professional degree offered in conjunction with the College of Education. Persons who are interested primarily in administrative and teaching positions in public schools and related fields are encouraged to pursue this degree.

The degree is awarded for successful completion of a minimum of 90 hours of graduate credit and a demonstrated competency in the study and solution of problems related to the student's field of endeavor.

At least 30 class hours of the minimum of 90 hours must be taken on the College Park campus. The number of hours that can be transferred from another institution is subject to the decision of the Graduate Council. Each student is expected to select and carry to successful completion a research project of particular interest to him. This project is reported in the form of a thesis and may carry from six to nine hours of credit. In addition, each student must demonstrate his ability to translate two of the following three foreign languages: German, French, and Spanish. A demonstration of proficiency in statistics may be substituted for one foreign language and if a justifiable reason can be given any foreign language can be substituted for one of the three languages. In pursuing



the Doctor of Education degree, the candidate must select an area of major emphasis and area or areas of minor emphasis. Each candidate must take certain graduate background tests, and must successfully pass the following academic examinations: a six-hour preliminary examination taken relatively early in the program, a final written comprehensive examination covering the entire graduate course of study, and a final oral or written examination directed primarily towards the research project.

#### THE DOCTOR OF PHILOSOPHY DEGREE

The Doctor of Philosophy degree is offered primarily for those persons interested in preparing themselves for positions in teaching and research on the college and university level. A *minimum* of 90 credit hours is required for this degree, plus the demonstrated ability to do scholarly work and research. At least thirty of the 90 hours must be taken on the College Park campus and the amount of credit that can be transferred from other institutions is subject to the decision of the Graduate Council. Each student must select and carry to completion a research project which may carry from 12 to 18 hours of credit. Course work must be planned on the basis of a major subject field and one or two closely related minor subject fields. In addition to class work, the student must demonstrate a reading proficiency in German and French or Spanish, and also successfully pass two examinations: (1) a comprehensive preliminary examination, taken before the last twelve hours of class work and (2) a final oral and/or written examination dealing primarily with the dissertation.

#### GENERAL ADVANCED STUDY

Students who are not seeking a degree, but are doing advanced study to fulfill some special need or renewal of teaching certification, are encouraged to select an adviser and to plan a program designed to best help them achieve their objectives. A professional diploma in education with a major in physical education, recreation or health education may be earned by successfully completing a minimum of thirty credit hours of advanced study beyond the Master's degree, and fulfilling other requirements stipulated by the College of Education.

#### PREREQUISITES FOR ADVANCED STUDY

The course prerequisite for advanced study in each of the three areas, physical education, recreation, and health are listed below. In certain instances, experience or equivalent courses may be substituted for the courses listed. Students who are deficient in only one or two subjects, but who, in undergraduate work, have demonstrated a high academic potential, may be admitted to graduate school on a provisional basis, with the understanding that the deficiencies will be made up as soon as practicable.

The following courses, or their equivalents, are prerequisites for advanced study:

- A. Physical Education—human anatomy, physiology, principles of physical education, theory of exercise (physiology of exercise), kinesiology, adaptives (special physical education, therapeutics), measurement, methods of teaching, sports skills, administration, practice teaching (teaching experience), and human development (educational psychology).

Note: Courses shown in the brackets above are the equivalents of the courses after which they are shown. Measurement, administration, kinesiology and theory of exercise may be taken for graduate credit if they have not been taken on the undergraduate level. The student is expected to carry out a special term project in connection with an advanced undergraduate course, in order to have it count toward the graduate major.

- B. Recreation—psychology, sociology, principles of recreation, administration, basic sciences, recreational activities, and practical experience.
- C. Health Education—biological sciences, bacteriology, human anatomy, physiology, chemistry, psychology, measurement, administration, principles of health, and field work.

#### GRADUATE ASSISTANTSHIPS

A number of teaching and research assistantships are available to qualified individuals. These assistantships carry a stipend of \$1,800 for the academic year, and exemption from all fixed charges. Graduate assistants may carry up to ten hours of academic work. Persons interested in an assistantship should write directly to Dean L. M. Fraley, College of Physical Education, Recreation, and Health.

Persons interested in additional information concerning the graduate program should refer to the Graduate School Announcements.

## COURSE OFFERINGS

The University reserves the right to withdraw or discontinue any course for which an insufficient number of students have registered to warrant giving the course. In such an event, no fee will be charged for transfer to another course.

Courses are designed by numbers as follows:

1 to 99: courses for undergraduates.

100 to 199: courses for advanced undergraduates and graduates.

200 to 299: courses for graduates only.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program. Students obtain these schedules when they register.

Physical education fee per semester (to be charged any student enrolled in any physical activity course), \$6.00.

## PHYSICAL EDUCATION

*P. E. 30. Introduction to Physical Education, Recreation, and Health. (2)*

First and second semesters. Development of understanding and appreciation of the historic and significant purpose and place of each of the specialized areas in general education. A study of the educational and personal requirements and opportunities of a career in each professional area. Students will be acquainted with the status and trends of each area.

*P. E. 40. Basic Body Controls. (1)*

First and second semesters. Three hours a week. Second semester arranged for benefit of transfers. Laboratory fee, \$6.00. This course is designed to acquaint the student with the fundamental principle and techniques of body movement, and to provide for practical application in sports, rhythmic and gymnastic activities. In addition, the course introduces balanced posture in standing, walking, sitting and work skills, as well as relaxation.

*P. E. 50. Rhythmic Analysis and Movement. (1-2)*

First and second semesters. Three hours a week. Laboratory fee, \$6.00. The development of rhythmic sensitivity through an analysis of rhythm and its application to movement. Percussion instruments will be used.

*P. E. 52, 54. Dance Techniques. (1, 1)*

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Introduction to techniques of modern dance, with simple approaches to composition.

*P. E. 55. Elementary School Rhythmic Activities. (2)*

First and second semesters and summer. This course surveys the various types of rhythmic activities suitable for use in the elementary school. Basic rhythms, singing games, and folk and square dancing are considered in terms of their use at the various grade levels as well as the best accepted methods of teaching these activities.

*P. E. 56. Skills and Methods in Folk and Square Dance. (1)*

First and second semesters. One lecture and three laboratories a week. Laboratory fee, \$6.00. This course is designed to acquaint the student with basic skills in Folk and Square Dance and to give theory of class organization, analysis, teaching techniques, and practice in "calling" for junior and senior high school programs.

*P. E. 57. Elementary School Skills and Self-Testing Activities. (2)*

First and second semesters and summer. This course surveys the various types of skills and stunt and tumbling activities suitable for use in the elementary school. These activities are considered in terms of their use at the various grade levels as well as the best accepted methods of teaching.

*P. E. 58. Skills and Methods in Social Dance. (1)*

First and second semesters. One lecture and three laboratories a week. Laboratory fee, \$6.00. This course is designed to acquaint the student with basic skills in Social Dance and to give theory of class organization, analysis and teaching techniques for junior and senior high school programs.

*P. E. 59. Skills in Folk, Square and Social Dance. (1)*

First and second semesters. Three hours a week. Prerequisite, P. E. 50. Laboratory fee, \$6.00. This course is designed to acquaint the student with the basic skills in Social, Folk, and Square Dance for use in schools and recreational groups.

*P. E. 60. Dance Composition. (2)*

First and second semesters. Four hours a week. Laboratory fee, \$6.00. The study of dance content and relationship to form and style. Theory and laboratory problems in composition. Modern dance forms.

*P. E. 61, 63. Sport Skills and Gymnastics. (2, 2)*

First and second semesters. Six hours a week. Laboratory fee, \$6.00. Progressive techniques and practice of skills in apparatus, calisthenics, cross-country, dual recreation activities, mass games and relays, soccer, touch football, track, tumbling, and volleyball.

*P. E. 62, 64. Elementary Techniques of Sports and Gymnastics. (2, 2)*

First and second semesters. Six hours a week. Laboratory fee, \$6.00. Progressive techniques and practice of seasonal sports, stunts, tumbling, and gymnastic exercises.

*P. E. 65, 67. Sport Skills and Gymnastics. (2, 2)*

First and second semesters. Six hours a week. Laboratory fee, \$6.00. Progressive techniques and practice of skills in basketball, baseball, football and wrestling.

*P. E. 66, 68. Techniques of Sports. (2, 2)*

First and second semesters. Six hours a week. Prerequisites, P. E. 40, 62, 64. Laboratory fee, \$6.00. Techniques of selected team and individual sports.

*P. E. 70. Intermediate Modern Dance. (2)*

First and second semesters. Four laboratory periods a week. Prerequisites, P. E. 52, 54 or permission of instructor. Laboratory fee, \$6.00. Modern dance techniques. Compositional problems.

*P. E. 71. Elementary Swimming. (1)*

First and second semesters. Laboratory fee, \$6.00. Progressive techniques and practice of elementary swimming. Course includes basic and intermediate swimming instruction.

*P. E. 72. Elementary Swimming and Diving. (1)*

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Progressive techniques and practice in the elementary phase of swimming and diving, designed to make the student self-sufficient in deep water.

*P. E. 73. Advanced Swimming. (1)*

First and second semesters. Prerequisite, P. E. 71, or equivalent. Laboratory fee, \$6.00. Progressive techniques and practice of advanced swimming skills, water stunts and survival swimming.

*P. E. 74. Intermediate Swimming and Diving. (1)*

First and second semesters. Three hours a week. Prerequisite, P. E. 72, or equivalent. Laboratory fee, \$6.00. Continuation of the techniques in P. E. 72 to include proficiency in the standard swimming strokes and the ability to perform a fully coordinated standing dive.

*P. E. 75. Life Saving and Water Safety. (1)*

First and second semester. Three hours a week. Prerequisites, P. E. 73, or equivalent. Laboratory fee, \$6.00. Progressive techniques and practice of life saving and water safety skills. Course includes the Senior Life Saving material of the American Red Cross and the Y.M.C.A. It is possible to secure the American Red Cross Water Safety Instructorship through this course.

*P. E. 76. Advanced Swimming and Diving. (1)*

First and second semesters. Three hours a week. Prerequisites, P. E. 72 and P. E. 74, or equivalent. Laboratory fee, \$6.00. Continuation of the techniques of P. E. 74, to include more advanced swimming strokes, fancy diving, water stunts, and life saving.

*P. E. 77. Methods of Aquatics. (2)*

First and second semesters. Three hours a week. Prerequisites, P. E. 73, or equivalent. Laboratory fee, \$6.00. This course is designed to train students for aquatic leadership in schools, camps, and clubs. Course includes teaching methods, administration, facilities and equipment.

*P. E. 78. Methods of Teaching Aquatics. (2)*

First and second semesters. One lecture and three laboratory hours a week. Prerequisites, P. E. 74, 76, or equivalents. This course is designed to prepare the students to teach swimming and diving, administer swimming pools, conduct recreational aquatic activities, and direct camp aquatic programs.

*P. E. 79. Fancy Diving. (1)*

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Progressive techniques and practice of fancy diving. Course will include work on the five categories of dives.



*P. E. 80. Advanced Modern Dance. (2)*

First and second semesters. Four laboratory periods a week. Prerequisites, P. E. 52, 54, or 70 or permission of the instructor. Laboratory fee, \$6.00. Continuation of P. E. 70 in more advanced form.

*P. E. 82, 84. Officiating. (0, 0)*

First and second semesters. One lecture and two laboratory hours a week. Techniques of officiating women's sports. Opportunities to qualify for local and national ratings in hockey, basketball, volleyball and softball.

*P. E. 90. Workshop. (1)*

First and second semesters. Three laboratory hours a week. Permission of instructor only. Laboratory fee, \$6.00. Planning, composition, and presentation of demonstrations. A total of 6 credits may be earned.

*For Advanced Undergraduates and Graduates \**

*\*P. E. 100. Kinesiology. (4)*

First and second semesters and summer. Three lectures and two laboratory hours a week. Prerequisites, Zool. 1, 14, and 15, or the equivalent. The study of human movement and the physical and physiological principles upon which it depends. Body mechanics, posture, motor efficiency, sports, the performance of atypical individuals, and the influence of growth and development upon motor performance are studied.

*P. E. 101, 103. Organization and Officiating in Intramurals. (1, 1)*

First and second semesters. Six hours a week. Organizations, administration, and promotion of intramurals at various school levels. Types of tournaments, units of competition, handling of student leader personnel, etc.

*P. E. 110. Dance Production. (3)*

First and second semesters. Prerequisites, P. E. 52, 54, 60, 70, 80, or equivalent. Planning of group and individual choreography. Aspects of dance production such as staging, costumes, make-up for dancers, acquainting the student with elements of dance and theatre. Demonstration planning.

*P. E. 113. Methods and Materials for Secondary Schools. (3)*

First and second semesters. Prerequisites, P. E. 30, 50, 60, 61, 63, 65, 67. This course is designed to help the students acquire a knowledge of the application of methods which directly or indirectly influence teacher-pupil learning situations in physical education at the secondary school level. Students will be required to arrange time to work with a staff physical education instructor in order to gain some practical teaching experience. Class activities include discussions, reports, outside readings, and teaching demonstrations.

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

*P. E. 115. Methods and Materials for Secondary Schools. (1)*

Second semester. Three laboratory hours per week arranged. Prerequisites, P. E. 113, This is a laboratory course designed to help the student acquire practical experience in the courses of the University required program. The student will be given the opportunity to observe and assist in teaching under the direct supervision of a regular staff member.

*P. E. 114, 116. Methods in Physical Education for Secondary Schools. (3, 1)*

First and second semesters. Three lectures a week. Prerequisites, P. E. 40, 62, 64, 66, 68. Application of educational philosophy and principles to class organization and teaching techniques in individual sports, recreational games, gymnastics, body mechanics, dance, and relaxation for junior and senior high school programs.

*\*P. E. 120. Physical Education for the Elementary School. (3)*

First and second semesters and summer. This course is designed to orient the general elementary teacher to physical education. Principles and practices in elementary physical education will be presented and discussed and a variety of appropriate activities will be considered from the standpoint of their use at the various grade levels.

*P. E. 123, 125. Coaching Athletics. (3, 3)*

First and second semesters. Two lectures and two laboratory hours a week. Methods of coaching the various competitive sports commonly found in high school and college programs.

*P. E. 124, 126. Practicum in Leadership. (2, 2)*

First and second semesters. One lecture and one three hour laboratory period a week. Prerequisites, permission of instructor. This course is designed to prepare the student for the student teaching experience by assisting in non-professional University classes. It also provides guidance in methods and materials of teaching in the junior and senior high schools.

*P. E. 130. Fundamentals of Body Dynamics. (3)*

First and second semesters and summer. This course is designed to acquaint the elementary teacher with the scientific principles of mechanical-anatomical analysis and physiology of activities as they relate to physical growth and development.

*P. E. S131. Coaching Basketball. (2)*

Summer only. Methods of coaching basketball in high school and college.

*P. E. S133. Coaching Football. (2)*

Summer only. Methods of coaching football in high school and college.

*P. E. 135. Coaching Swimming and Diving. (2)*

First and second semesters. Three hours a week. Laboratory fee, \$6.00. A thorough analysis of the techniques of coaching swimming and diving. Course includes a systematic treatment of the philosophy, historical development and psychological theories of coaching aquatics.

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

*P. E. 140. Curriculum, Instruction and Observation. (3)*

First and second semesters. Prerequisites, men—P. E. 113; women—P. E. 114, 116, 124, 126. A course designed to provide directed observations and discussion, coordinating these experiences with those from previous methods courses in the development of curriculums for health and physical education. The course is planned to prepare for student teaching which follows in the same semester. The observations will be made of health and physical education programs in junior and senior high schools. This course must be taken during the semester in which the student is doing student teaching.

*\*P. E. 155. Physical Fitness of the Individual. (3)*

First and second semesters and summer. A study of the major physical fitness problems confronting the adult in modern society. Consideration is given to the scientific appraisal, development and maintenance of fitness at all age levels. Such problems as obesity, weight reduction, chronic fatigue, posture, and special exercise programs are explored. This course is open to persons outside the fields of Physical Education and Health.

*\*P. E. 160. Theory of Exercise. (3)*

First and second semesters and summer. Two lectures and one laboratory hour a week. Prerequisite, Zool. 1, 14, and 15, and P. E. 100 or the equivalent. A study of exercise and its physiological and kinesiological bases. Special emphasis is placed upon the application of exercise to the development and maintenance of physical efficiency. Corrective therapy, conditioning for athletics, the effects of exercise and training on the human organism, fatigue, staleness, relaxation, and the nature of athletic injuries are investigated.

*\*P. E. 170. Supervision in Elementary School Physical Education. (3)*

First and second semesters and summer. Prerequisite, P. E. 120. Principles and techniques of supervision are studied from a standpoint of their application in improving the learning situation in elementary school physical education. Strong emphasis will be given to the concept that modern supervision in elementary school physical education should be based on the application of fundamental democratic principles.

*\*P. E. 180. Measurement in Physical Education and Health. (3)*

First and second semesters and summer. Two lectures and two laboratory periods a week. Prerequisite placement in Group 1 or 2 on Mathematics Entrance test or Math. 0. The application of the principles and techniques of educational measurement to the teaching of health and physical education; study of the functions and techniques of measurement in the evaluation of student progress toward the objectives of health and physical education, and in the evaluation of the effectiveness of teaching.

*P. E. 181. Advanced Training and Conditioning. (3)*

Second semester. Two lectures and two laboratory hours a week. Prerequisites, Zool. 14, 15; P. E. 100. The training and physical conditioning of athletics. Treatment of athletic injuries by taping, massage, hydro-therapy, physical therapy, and electro-therapy. Remedial and conditioning exercises. Theory and practice.

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

*\*P. E. 182. History of Dance. (3)*

First and second semesters. The development of dance from primitive to modern times and the relationship of dance forms to patterns of culture. A historical survey of the changing place of dance in civilization. Research problems.

*\*P. E. 184. Theory and Philosophy of Dance. (3)*

First and second semesters. The study of the basic theories and philosophies of modern dance. Investigation of form, content and structure in dance and in relationship to other arts. The role of dance in education.

*\*P. E. 189. Field Laboratory Projects and Workshop. (1-6)*

First and second semesters and summer. A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in Physical Education, Recreation, or Health Education under P. E., Rec., Hea., or Ed. 189 is six.

*\*P. E. 190. Administration and Supervision of Physical Education, Recreation, and Health. (3)*

First and second semesters and summer. The application of the principles of administration and supervision to Physical Education, Recreation, and Health. This course must be taken during the semester in which the student is doing student teaching.

*\*P. E. 191. The Curriculum in Elementary School Physical Education. (3)*

First and second semesters and summer. Prerequisite, P. E. 120. Curriculum planning and construction is considered from a standpoint of valid criteria for the selection of content in elementary school physical education. Desirable features of cooperative curriculum planning in providing for learning experiences will be presented and discussed.

*P. E. 192. Percussion Accompaniment and Music for Dance. (2)*

First and second semesters. One lecture and two laboratory hours per week. Techniques of percussion playing and its use as dance accompaniment are emphasized. Learning to use the instruments in composition and improvisation is stressed. Music for dance and dance notation is included in the course. Percussion scores.

*\*P. E. 195. Organization and Administration of Elementary School Physical Education. (3)*

First and second semesters and summer. Prerequisite, P. E. 120. This course considers the procedures which are basic to the satisfactory organization of all phases of the elementary school physical education program. Stress will be placed on the organizational and administrative factors necessary for the successful operation of the program in various types of elementary schools. Strong emphasis will be placed on organization and administration from a standpoint of adapting the program to specific situations.

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.



\*P. E. 196. *Quantitative Methods.* (3)

First and second semesters and summer. A course covering the statistical techniques most frequently used in research pertaining to Physical Education, Recreation, and Health Education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

*For Graduates*

P. E. 200. *Seminar in Physical Education, Recreation, and Health.* (1)

First and second semesters and summer.

P. E. 201. *Foundations in Physical Education, Recreation, and Health.* (3)

First and second semesters and summers. A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

P. E. 202. *Status and Trends in Elementary School Physical Education.* (3)

First and second semesters and summer. An analysis of the current status and implications for future trends in physical education at the elementary school level. Open to experienced persons in all phases of education.

P. E. 203. *Supervisory Techniques in Physical Education, Recreation, and Health.* (3)

First and second semesters and summer. A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

P. E. 204. *Physical Education and the Development of the Child.* (3)

First and second semesters and summer. An analysis of the place of physical education in meeting the growth and developmental needs of children of elementary school age.

P. E. 205. *Analysis of Contemporary Athletics.* (3)

First and second semesters and summer. A study of current problems, practices, and national issues of paramount importance to the conduct of athletic competition in a democracy.

P. E. 210. *Methods and Techniques of Research.* (3)

First and second semesters and summer. A study of methods and techniques of research used in Physical Education, Recreation, and Health Education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

P. E. 215. *Principles and Techniques of Evaluation.* (3)

First and second semesters and summer. Prerequisite, an introductory course in measurement or permission of the instructor. A study of currently used means of evaluating the performance of students and the effectiveness of programs of physical education in schools and colleges. Specific problems concerning evaluation, brought in by members of the class, will be analyzed.



*P. E. 230. Source Material Survey. (3)*

First and second semesters and summer. A library survey course, covering the total areas of Physical Education, Recreation, and Health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

*P. E. 250. Mental and Emotional Aspects of Sports and Recreation. (3)*

First and second semesters and summer. Prerequisites, Psych. 1, or H. D. Ed. 100, 101, or equivalents. An exploration of psychological aspects of physical education, athletic sports and recreation. Applications of psychology are made to teaching and learning, coaching, athletic efficiency (motivation, emotional upset, staleness, etc.), and the problem of interpreting physical education and recreation experiences. Means of studying problems of these kinds are evaluated.

*P. E. 280. Scientific Bases of Exercise. (3)*

First and second semesters and summer. Prerequisites, Anatomy, Physiology, P. E. 100, 160, or equivalent. A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

*P. E. 287. Advanced Seminar. (1-2)*

First and second semesters and summer. Prerequisite, P. E. 201, or Hea. 220, or equivalent, or permission of the instructor. This course is a study of the current problems and trends in the selected fields of Physical Education, Recreation, and Health.

*P. E. 288. Special Problems in Physical Education, Recreation, and Health. (1-6)*

First and second semesters and summer. Master or Doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

*P. E. 289. Research—Thesis. (1-5)*

First and second semesters and summer. Students who desire credits for a Master's thesis, a Doctoral dissertation, or a Doctoral project should use this number.

*P. E. 290. Administrative Direction of Physical Education, Recreation, and Health. (3)*

First and second semesters and summer. This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

*P. E. 291. Curriculum Construction in Physical Education and Health. (3)*

First and second semesters and summer. A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

## RECREATION

### *Rec. 10, 11. Recreation Orientation. (0, 0)*

First and second semesters. Through occasional class sessions and attendance at various meetings on and off campus, those majoring in recreation will have an opportunity to become acquainted with their fellow students, with the organizations in the field, their leaders and activities, and with the broad scope of recreation and its various divisions and interests.

### *Rec. 30. History and Introduction to Recreation. (2)*

First and second semesters. An introduction to the beginnings, growth, and possibilities in recreation as presently fostered by individuals, agencies and governments; attitudes toward and theories of play; historical events and figures; present principles and objectives; organizations and groups interested in recreation, and their relationships; job opportunities, specifications and demands; self analysis of individual student interests; limitations and capabilities in light of these specifications and demands.

### *Rec. 40. Camp Counseling and Administration. (2)*

First and second semesters. A study of the philosophy and techniques of camp counseling including the qualifications, responsibilities and skills involved; the basic organization, administration and program planning practices and problems of camping as a whole; the relationship of these practices and problems to the counselor and his or her probable success. Outdoor skills will be taught and practiced insofar as possible.

### *For Advanced Undergraduates and Graduates\**

### *Rec. 100. Co-recreational Games and Programs. (2)*

First and second semesters and summer. Compilation and sampling of the techniques for use in low organization and party games and activities. Emphasis is placed upon those activities of value to a recreation leader or teacher, and upon the placement, sequence and variation of such activities for all age levels and interests.

### *Rec. 110. Nature Lore. (1-2)*

Second semester. An overall orientation course conducted in conjunction with the National Park Service of Washington, D. C., and covering various of the areas of physical and biological sciences; rocks, trees, animals, birds, flowers, etc. Two credits will be granted those students completing the maximum requirements of the course including local evening lectures. Saturday and/or Sunday observations, the Saturday Outdoor Leadership Workshop (24 hours), and periodic class meetings held at the University of Maryland.

### *\*Rec. 120. Program Planning. (3)*

First and second semesters. Prerequisite, Rec. 30 or 170. Study of the various aspects, problems and practices of family, agency and governmental recreation programs and their planning, with particular emphasis on playground-community and teen-age center plans and procedures. This course should be of interest and value to those students planning to do part-time summer playground work.

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

*Rec. 140. Observation and Field Work in Recreation. (5)*

First and second semesters. Included are observation and field work at various of the facilities available; particular emphasis will be placed on whatever observations may be needed to complete coverage of the various opportunities; field work opportunities themselves will be selected and assigned on the basis of student interest and future job plans.

*\*Rec. 150. Camp Management. (3)*

First and second semesters and summer. An advanced camping course for those students with previous training and experience; organization, administration, programming, current trends, evaluation, and special problems. Whenever possible, visiting specialists and field trips will be included.

*Rec. 170. General Fundamentals of Recreation. (3)*

First and second semesters. This course is designed for students not majoring in recreation who wish to develop some understanding of the place, importance and potentialities of recreation in modern life. Included will be limited study of the areas of philosophy, program planning, personality and leadership techniques, organization and administration, and interrelationships with other fields.

*\*Rec. 180. Leadership Techniques and Practices. (3)*

First and second semesters. A study of the various kinds of levels of leadership exerted by professional and semi-professional workers, some of the difficulties and probable weaknesses to be met, and some of the tangible techniques to be used in personnel, staff, and public relationships; handling of problem children, of personnel, of public relations campaigns, committee gatherings, etc. The group work approach will be emphasized and used, insofar as possible, in the solution of particular problems that grow out of practical experiences in handling on and off campus groups.

*Rec. S184. Outdoor Education. (6)*

Summer only. A full-time program for teachers, administrators, recreation leaders, and social workers in functionalized child development through utilization of the surrounding natural environment and resources. Guided group work implements the acquired techniques for use with children in developing education in democratic living, worthy use of leisure, certain character traits and also for vitalizing such subject-matter areas as mathematics, language, arts, social and natural sciences, music, health and physical education, graphic and plastic arts.

*\*Rec. 189. Field Laboratory Projects and Workshop. (1-6)*

First and second semesters and summer. A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in Physical Education, Recreation, or Health Education under P. E., Rec., Hea., or Ed. 189 is six.

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

*\*Rec. 190. Organization and Administration of Recreation. (3)*

First and second semesters and summer. A study of the organizational patterns and administrative problems involved in the various kinds of operating recreation groups and agencies; forms of organization; finance and budgets; personnel; areas, facilities, and equipment; public relations.

*\*Rec. 196. Quantitative Methods. (3)*

First and second semesters and summer. A course covering the statistical techniques most frequently used in research pertaining to physical education, recreation and health education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

*For Graduates*

*Rec. 200. Seminar in Physical Education, Recreation, and Health. (1)*

First and second semesters and summer.

*Rec. 201. Foundations of Physical Education, Recreation, and Health. (3)*

First and second semesters and summer. A study of history, philosophy and principles of Physical Education, Recreation and Health as applied to current problems in each area and as related to general education.

*Rec. 202. Philosophy of Recreation. (2)*

First and second semesters and summer. A study of the meanings, relationships, and services of recreation as expressed by past and present authorities and leaders. This course should be of interest to people active in education, social work and related fields.

*Rec. 203. Supervisory Techniques in Physical Education, Recreation, and Health. (3)*

First and second semesters and summer. A study of current concepts, principles and techniques of supervision and their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

*Rec. 204. Modern Trends in Recreation. (3)*

First and second semesters and summer. A study of emphasis and recent developments in the recreation field as a whole and within its various specialized areas, making particular reference to the current and new literature.

*Rec. 210. Methods and Techniques of Research. (3)*

First and second semesters and summer. A study of methods and techniques of research used in Physical Education, Recreation, and Health Education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

*Rec. 230. Source Material Survey. (3)*

First and second semesters and summer. A library survey course, covering the total areas of Physical Education, Recreation, and Health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

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\* Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.



*Rec. 240. Industrial Recreation. (3)*

First and second semesters and summer. An introductory study of the philosophy of and practices and problems in industrial recreation. Where possible the course will include opportunities for observation and visiting specialists.

*Rec. 260. Hospital Recreation. (3)*

First and second semesters and summer. An introductory study of the philosophy of and practices and problems in hospital and institutional recreation. Where possible the course will include opportunities for observation and visiting specialists.

*Rec. 287. Advanced Seminar. (1-2)*

First and second semesters and summer. Prerequisites, P. E. 201, Hea. 201, Rec. 201, or Hea. 220, or permission of the instructor. This course is a study of the current problems and trends in the selected fields of physical education, recreation and health education.

*Rec. 288. Special Problems in Physical Education, Recreation, and Health. (1-6)*

First and second semesters and summer. Master or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

*Rec. 289. Research—Thesis. (1-5)*

First and second semesters and summer. Students who desire credits for a master's thesis, a doctoral dissertation, or a doctoral project should use this number.

*Rec. 290. Administrative Direction of Physical Education, Recreation, and Health. (3)*

First and second semesters and summer. This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

## HEALTH EDUCATION

*Hea. 10. Orientation to Health Education. (1)*

First and second semesters. This course explores the field of health education in both the school and the community from the point of view of the health educator. Professional preparation and career opportunities are considered.

*Hea. 30. Introduction to Physical Education, Recreation, and Health. (3)*

First and second semesters. Development of understanding and appreciation of the historic and significant purpose and place of each of the specialized areas in general education. A study of the educational and personal requirements and opportunities of a career in each professional area. Students will be acquainted with the status and trends of each area.



*Hea. 40. Personal and Community Health. (3)*

First and second semesters. Meaning and significance of physical, mental, and social health as related to the individual and to society; important phases of national health problems; constructive methods of promoting health of the individual and the community; health problems of college students and young people with special emphasis on health knowledge for the future teacher.

*Hea. 50. First Aid and Safety. (1)*

First and second semesters. Standard and Advanced American Red Cross courses in first aid; safety in physical activities.

*Hea. 60. Advanced First Aid. (2)*

First and second semesters. Opportunity to secure Red Cross Advanced and Instructor's Certificate.

*Hea. 70. Safety Education. (3)*

First and second semesters. A study of the causes of accidents and methods of prevention, including principles of traffic and industrial safety.

*Hea. 80. The Driver, His Characteristics and Improvement. (3)*

First and second semesters and summer. Prerequisites, Hea. 50, 70. The aim of this study is to treat the driver-behavior problem in its relation to many of the psychophysical factors and forces in the traffic environment that impinge upon the man behind the wheel.

*For Advanced Undergraduates and Graduates\**

*Hea. 105. Basic Driver Education. (3)*

First and second semesters and summer. Prerequisites, Hea. 50, 60, 70, 80. This course is a study of the place of the automobile in modern life and deals with the theory and practice of the following: traffic accidents and other traffic problems; objectives and scope of driver-education; motor vehicle laws and regulations; basic automobile construction and maintenance from the standpoint of safety, methods in classroom instruction; aids to learning and practice driving instruction.

*Hea. 110. Introduction to School Health Education. (2)*

First and second semesters and summer. Prerequisites, Hea. 2 and 4, or Hea. 40. This course deals with many aspects of school and community health programs, and the backgrounds and history of the services studied with their relationships to each other directly and indirectly. Various phases of healthful living are discussed as a part of school and community health. Special emphasis is placed upon the health services of both programs.

*Hea. 120. Methods and Materials in Health Education. (3)*

First and second semesters. Prerequisite, Hea. 40 or equivalent. This course considers various plans of teaching health in schools and elsewhere. Health education teaching methods and materials are evaluated with regard to their application to practical situations.

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\* Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

*Hea. 140. Curriculum, Instruction and Observation. (3)*

First and second semesters and summer. Prerequisites, Hea. 40, 110, 120. A course designed to provide directed observation and discussion, coordinating these experiences with those from previous methods courses in the development of curricula for health and physical education. The course is planned to prepare for student teaching which follows in the same semester. The observations will be made of health and physical education programs in junior and senior high schools. This course must be taken during the semester in which the student is doing student teaching.

*Hea. 145. Advanced Driver Education. (3)*

First and second semesters and summer. Prerequisites, Hea. 50, 60, 70, 80, 105. Progressive techniques, supervision, and practice of advanced driver-education; comprehensive programming for traffic safety; psychology of traffic safety; improving the attitudes of young drivers; teaching to meet driving emergencies; program planning in driver-education; consumer education; resources and agencies; the teacher and driver-education; measuring and evaluating results; driver-education for adults; new developments in driver-education; insurance and liability, and the future of driver-education.

*\*Hea. 150. Health Problems of Children and Youth. (3)*

First and second semesters and summer. This course involves a study of the health needs and problems of pupils from the primary grades through high school. Physical, mental, and psychosomatic aspects of health are considered in relation to the developmental and school levels. Consideration is given to such topics as: diet selection and control; exercise, recreation and rest; emotional upset and its implications; and psychosexual development and problems. The role of the teacher and parent in encouraging optimal health is emphasized.

*\*Hea. 160. Problems in School Health Education in Elementary and Secondary Schools. (2-6)*

First and second semesters and summer. This is a workshop type course designed particularly for in-service teachers to acquaint them with the best methods of providing good health services, healthful environment and health instruction.

*\*Hea. 170. The Health Program in the Elementary School. (3)*

First and second semesters and summer. Prerequisites, Hea. 2 and 4 or Hea. 40. This course, designed for the elementary school classroom teacher, analyzes biological, sociological, nutritional and other factors which determine the health status and needs of the individual elementary school child. The various aspects of the school program are evaluated in terms of their role in health education. The total school health program is surveyed from the standpoint of organizing and administration, and health appraisal. Emphasis is placed upon modern methods and current materials in health instruction. (The State Department of Education accepts this course for biological science credit.)

*\*Hea. 178. Fundamentals of Sex Education. (3)*

This course is concerned with basic information regarding the physical, psychological, social, historical, and comparative cultural aspects of sex. The adjustment needs and

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problems of children and adults during the course of maturing and aging are studied; and special consideration is given to the sex education program in schools.

*\*Hea. 180. Measurement in Physical Education and Health. (3)*

First and second semesters and summer. Two lectures and two laboratory periods per week. The application of the principles and techniques of educational measurement to the teaching of health and physical education; study of functions and techniques of measurement in the evaluation of student progress toward the objectives of health and physical education, and in the evaluation of the effectiveness of teaching.

*Hea. 188. Children's Remedial Fitness Clinic. (1-4)*

First and second semesters and summer. Prerequisite, at least junior standing in health, physical education and recreation, or by special permission of the director. Children are referred to the clinic by hospitals, special education groups and by physicians, psychologists, psychiatrists, optometrists, physical educators and others concerned with child health and fitness. Eligible students may serve as clinicians with or without credit and work, under supervision, with children individually (perhaps eventually in pairs or in small groups) on prescribed programs of developmental, fitness and recreational activities.

*\*Hea. 189. Field Laboratory Projects and Workshop. (1-6)*

First and second semesters and summer. A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in physical education, recreation, or health education under P. E. Rec., Hea., or Ed. 189 is six.

*\*Hea. 190. Administration and Supervision of School Health Education. (3)*

First and second semesters and summer. The application of the principles of administration and supervision to school health education. This course involves observation and field work in school and community health programs.

*For Graduates*

*Hea. 200. Seminar in Physical Education, Recreation, and Health. (1)*

First and second semesters and summer.

*Hea. 201. Foundations in Physical Education, Recreation, and Health. (3)*

First and second semesters and summer. A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

*Hea. 203. Supervisory Techniques in Physical Education, Recreation, and Health. (3)*

First and second semesters and summer. A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

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\* Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

*Hea. 210. Methods and Techniques of Research. (3)*

First and second semesters and summer. A study of methods and techniques of research used in physical education, recreation and health education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

*Hea. 220. Scientific Foundations of Health Education. (3)*

First and second semesters and summer. A course dealing with an analysis of hereditary, physical, mental, and social factors which influence the total health status during the developmental process. The role of education in fostering physical and mental health is studied.

*Hea. 230. Source Material Survey. (3)*

First and second semesters and summer. A library survey course, covering the total areas of physical education, recreation and health, plus research in one specific limited problem of which a digest, including a bibliography, is to be submitted.

*Hea. 240. Modern Theories of Health. (3)*

First and second semesters and summer. The purpose of this course is to familiarize advanced students in health education with modern theories of health and disease which involve so-called mind-body relationships. Major topics of study and analysis include the theories of psychosomatics, stress, hypnosis and constitutional psychology.

*Hea. 250. Health Problems in Guidance. (3)*

First and second semesters and summers. A course designed to familiarize guidance counselors with principles of health and with common deviations from health, especially during the school years. Implications of health for pupil effectiveness in the entire curriculum, including extra-class activities, are dealt with. Special attention is given to psychosomatic disturbances which are commonly an aspect of personal problem situations. Methods of dealing with health problems and utilizing available resources of school and community are discussed.

*Hea. 260. Public Health Education. (3)*

First and second semesters and summer. A course designed to acquaint the student with the structure, functions and major problems in public health; and with the role of education in public health.

*Hea. 270. Status and Trends in Health Education. (3)*

First and second semesters and summer. This course is concerned with analyzing the current status and implications for future trends in the various areas of health education.

*Hea. 280. The Scientific Bases of Exercise. (3)*

First and second semesters and summer. Prerequisites, Anatomy, Physiology, P. E. 100, P. E. 160, or the equivalent. A critical analysis of the role of physical exercise in modern society with attention given to such topics as: the need for physical exercise, its chronic effects, the role of exercise in attaining good physical condition and fitness, factors determining championship performances, and physical fatigue.

*Hea. 287. Advanced Seminar. (1-2)*

First and second semesters and summer. Prerequisites, P. E. 201, Hea. 201, Rec. 201,



## Physical Therapy

or Hea. 220, or permission of the instructor. This course is a study of the current problems and trends in the selected field of physical education, recreation and health education.

### *Hea. 288. Special Problems in Physical Education, Recreation, and Health. (1-6)*

First and second semesters and summer. Master or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

### *Hea. 289. Research—Thesis. (1-5)*

First and second semesters and summer. Students who desire credit for a master's thesis, doctoral dissertation, or a doctoral project should use this number.

### *Hea. 290. Administrative Direction of Physical Education, Recreation, and Health. (3)*

First and second semesters and summer. This course is devoted to the analysis of administrative problems in the light of sound educational practice. Students concentrate their efforts upon their own on-the-job administrative problems and contribute to the solution of other class members' problems.

### *Hea. 291. Curriculum Construction in Physical Education and Health. (3)*

First and second semesters and summer. A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

## PHYSICAL THERAPY

### COLLEGE PARK CAMPUS

#### *P. T. 10, 11. Physical Therapy Orientation. (0, 0)*

First and second semesters. General introductory course to the professional field of physical therapy. Field trips to physical therapy departments in government and private agencies. Orientation of the student to job opportunities with their specifications and demands; self analysis of the students' capabilities and the major curriculum in light of such specifications and demands.

#### *P. T. 20, 21. Foundations of Physical Therapy. (1, 1)*

First and second semesters. Introduction to the development, growth and function of physical medicine and rehabilitation with regard to the role of the physical therapist. A study of the national organization and the leaders in the field. Analysis of medical terminology and development of a field vocabulary.

### *For Advanced Undergraduates*

### BALTIMORE CAMPUS

#### *Anat. 103. Human Anatomy. (8½)*

First and second semesters. Prerequisites, Zool. 1, 2, 20. The student is given an opportunity to develop a basic concept of the morphology of the human body through a correlation of histology, gross anatomy and neuro-anatomy. Dissection of the human body including the brain is required.



*Path. 105. Pathology. (2)*

Second semester. Prerequisites, Anat. 103, Physiol. 22 taken concurrently. This course includes the study of the basic principles of disease and injury with their application to the various systems of the body. Special emphasis is placed on the locomotor system.

*Physiol. 22. General Physiology. (5)*

Second semester. Prerequisites, Zool. I, 2; Chem. 1, 3. A course in the fundamentals of human physiology, including neurophysiology, the heart and circulation, respiration, digestion, the kidney and endocrine glands.

*Psych. 161. Psychology for the Handicapped. (1)*

First semester. Prerequisite, Psych. 5. This course is devoted to the consideration of human relations as applied to the practice of physical therapy. Emphasis is placed on observing, understanding and evaluating the personal and social factors affecting the handicapped.

*P. T. 102. Physiology of Exercise. (1)*

First semester. Prerequisites, Anat. 103, Physiol. 22. A consideration of the mechanism of muscular contraction and problems concerned with increasing efficiency of movement in motor activities and work.

*P. T. 104. Functional Anatomy. (2½)*

First semester. Prerequisites, Anat. 103, Physiol. 22. This course is primarily a consideration of the locomotor activity of the human body. It is designed to include observation and analysis of motion as it occurs in man under normal and pathological conditions.

*P. T. 106. Professional Relations, Ethics and Clinical Observation. (1)*

First and second semesters. A consideration of appropriate conduct related to personal and professional relations of the physical therapist.

*P. T. 107. Physical Therapy Theory and Technique I. (2½)**(a) Massage*

First semester. The theory, physiological effects and techniques of scientific massage as it is used in all aspects of physical therapy are discussed and administered.

*(b) Hydrotherapy*

First semester. The physics of water, cold and heat are reviewed. The various techniques of whirlpool, hot and cold applications, showers and underwater exercise in relation to various conditions are practiced and discussed.

*(c) Bandaging*

First semester. In this course one learns the principles and practice of bandaging with particular emphasis on bandages for support and conformity.

*P. T. 108. Physical Therapy Theory and Technique II—Thermotherapy and Actinotherapy. (1½)*

Second semester, third quarter. Two hours lecture, three hours laboratory per week. The basic physics and physiological effects of heat and ultraviolet are discussed. The student practices the therapeutic application of infra-red and ultra-violet lamps, diathermy, microthermy and ultrasonics.

*P. T. 110. Principles of Physical Therapy Applied to Medical and Surgical Conditions. (2½)*

First and second semesters. This course presents to the students various conditions encountered in patients treated by the physical therapist. Specialists from various fields of medicine and surgery discuss the problems in their practice with emphasis on indications for various treatment procedures.

- A. Dermatology
- B. Medicine
- C. Psychiatry

*P. T. 151. Therapeutic Exercise. (5)*

First semester. A study of the principles and techniques of therapeutic exercise related to the prevention, correction and alleviation of disease and injury. This course includes manual muscle testing, muscle re-education, joint measurement, gait training and functional activities.

*P. T. 152. Rehabilitation. (3)*

Second semester. This course is designed to study the principles and practices employed in the comprehensive care and treatment program of the physically handicapped. It includes the evaluation of activities of daily living as well as the application and care of supportive devices.

*P. T. 153. Physical Therapy Theory and Technique III. (3)*

*(a) Electrotherapy*

First semester. This course includes lectures, demonstrations and laboratory tests concerning the physical and physiological effects of low frequency, alternating and direct currents. The therapeutic and the diagnostic use of electricity is discussed and practiced.

*P. T. 154. Interprofessional and Social Agencies Correlation. (1)*

Second semester. Representatives of allied fields and of related social agencies participate in presentation of information and discussion of their specific roles in total patient care.

*P. T. 155. Nursing Procedures Related to Physical Therapy. (1½)*

First semester. This course serves to acquaint the student with bedside, aseptic and isolation techniques. Laboratory practice includes the application of bandages and splints, the dressing of wounds and methods of handling acutely ill and chronically disabled patients.

*P. T. 156. Current Literature. (1)*

Second semester. This course is designed to acquaint the student with professional and scientific literature. It affords experience in presenting reports and in group discussion.

*P. T. 157. Administration and Clinical Observation. (1)*

First semester. The organization and administration of a hospital and of a physical therapy department is presented.

P. T. 158. *Clinical Experience.* (6)

First and second semesters. During this period the student gains experience practicing physical therapy procedures in a hospital physical therapy department under the careful supervision of qualified physical therapists.

P. T. 160. *Principles of Physical Therapy Applied to Medical and Surgical Conditions.* (5)

First and second semesters. These lectures present to the students various conditions encountered in patients treated by the physical therapists. Specialists from various fields of medicine and surgery discuss the problems in their practice which are related to physical therapy with emphasis on indications for various treatment procedures.

- A. Gynecology and Obstetrics
- B. Neurology
- C. Physical Medicine and Rehabilitation
- D. Public Health
- E. Surgery
- F. Pediatrics
- G. Orthopedics

## NON-MAJOR PROGRAM

### Required Physical Education Courses For Men and Women

All undergraduate men and women students classified as freshmen or sophomores, who are registered for more than six semester hours of credit are required to enroll in and successfully complete four prescribed courses in physical education and/or athletics for a total of four semester hours of credit. The successful completion of these courses is required for graduation. These courses must be taken by all eligible students during the first two years of attendance at the University, whether they intend to graduate or not. Men and women who have reached their thirtieth birthday are exempt from these courses. Students who are physically disqualified from taking these courses must enroll in adapted courses for which credit will be given. Transfer students who do not have credit in these courses, or their equivalent, must complete them or take them until graduation, whichever occurs first.

Students majoring or minoring in physical education, recreation, health education, physical therapy, or specializing in elementary school physical education and health education, may meet these requirements by special professional courses.

#### REQUIRED COURSES

P. E. Courses for men carry odd numbers—1, 3, 5, 7.

P. E. Courses for women carry even numbers—2, 4, 6, 8.

Co-ed classes are formed by combining men's and women's sections.

A student having a physical handicap which prevents participation in the regular required program will be assigned to an adapted activity suitable to his or her physical capacity. This refers to P. E. 1 to 8, inclusive.

*Fees* for all physical education courses will be \$6.00 per semester.

*Equipment*—Students may be required to provide individual equipment for some courses.

*P. E. S10. Physical Education Activities. (1-6)*

Summers only. Laboratory fee, \$6.00. Instruction and practice in selected sports; tennis, golf, and swimming.

Note. (1). Not available for credit to physical education majors.

Note. (2). Non-majors in physical education may use this credit to fulfill graduation requirements in physical education.

## THE PROGRAM FOR MEN

The program of physical education for men offers the college student an opportunity to acquire skills, knowledges, and appreciations in a variety of physical and sport activities. Adequate participation now and in the future will contribute to more efficient physiological functioning, effective movement, improved human relations, and worthwhile use of leisure time.

Students are required to complete one unit of work in each of the following four courses.

### *P. E. 1. Orientation to Physical Education. (1)*

First and second semesters. Three hours a week. Laboratory fee, \$6.00. The purpose of this course is to give the student a better understanding and appreciation of the place of sports and physical education in the American way of life. It is designed to introduce the student to the value of sports participation in each of the three areas: (1) Developmental and Combative Sports, (2) Team Sports and Aquatics, (3) Recreational Activities. This is accomplished through reading assignments, lectures, discussions, and by participation in a variety of sports in each area. In addition, each student is acquainted with the fitness, health, social, and leisure time values inherent in continued participation in sports and other physical education activities.

All entering freshmen are required to complete P.E. 1. *Orientation to Physical Education*. Students are then guided into an activity in each of the three areas indicated below. The selection of an activity is based upon the student's individual needs, interests, his past experience, and his level of fitness. Students who fail the swimming classification test, one of the *Orientation to Physical Education* requirements, are required to enroll in elementary swimming.

### *P. E. 3. Developmental and Combative Sports. (1)*

First and second semesters. Three hours a week. Prerequisite, P.E. 1. Laboratory fee, \$6.00. Students are guided into one of the following: apparatus; double tumbling and balancing; individual tumbling; track and field and wrestling; weight training, basic motor fitness.

### *P. E. 5. Team Sports and Aquatics. (1)*

First and second semesters. Three hours a week. Prerequisite, P. E. 1. Laboratory fee, \$6.00. Students are guided into one of the following: Elementary swimming; advanced swimming; life saving; water safety instructors course\*; fancy diving; softball and basketball; speedball and flickerball; touch football and volleyball; soccer and volleyball.

### *P. E. 7. Recreational Activities. (1)*

First and second semesters. Three hours a week. Prerequisite, P. E. 1. Laboratory fee, \$6.00. Students are guided into one of the following: archery and bowling\*\*; tennis and badminton\*\*; camping and outdoor activities\*\*; canoeing\*\*; fishing\*\*; sailing\*\*; social dance\*\*; square dance\*\*.

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\*Prerequisite for this course: 18 years of age or older and hold a current Senior Life Saving Card.

\*\*Some sections of these activities are co-ed.



**COSTUME:** Each male student enrolled in required physical education will be furnished a red and black reversible T-shirt, black trunks, socks, supporter, and towel. Gymnasium shoes, and for some classes, sweat clothes will be furnished by the student.

At the end of each semester or upon withdrawal from the University each student *must* return his clothing to the equipment custodian or he will be billed for all items of clothing missing, plus a \$2.00 penalty fee. In addition the College will not assume responsibility for student's personal clothing or his lock.

**LOCKS AND LOCKERS:** A basket is assigned each student upon presentation of his University fee receipt. During class time each student secures his clothing and basket in a locker.

#### THE PROGRAM FOR WOMEN

Through participation in a variety of activities, freshman and sophomore women have the opportunity to acquire skills, knowledge, and attitudes which will contribute to personal enjoyment and better physical efficiency. Students are required to complete one unit of work in each of the four areas. Activities within the specified areas may be selected according to individual interests and needs. Students are urged to develop new skills as well as to select those in which they would like to have further experience.

The areas are designated by specific numbers as follows:

##### *P. E. 2. Orientation Activities. (1)*

First and second semesters. Three hours a week. Required of all freshman women. Laboratory fee, \$6.00. This is a summary course designed to acquaint the student with the role of the College of Physical Education, Recreation, and Health at the University of Maryland. It includes the teaching of basic body mechanics as related to posture and sports skills. It helps the student understand the use of exercise and relaxation in relation to total fitness for her college life and for the future.

##### *P. E. 4. Swimming. (1)*

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Classification tests are given in swimming to determine the skill level of all students. Having taken this test each student may elect a course best suited to her own skills from the following: beginning, low intermediate, high intermediate, advanced, synchronized, diving, senior life saving, water safety instructors, methods of teaching aquatics.

Each course is designed to improve the skill of the individual, to increase enjoyment in swimming and to give an understanding of safety factors involved in swimming.

##### *P. E. 6. Dance. (1)*

First and second semesters. Three hours a week. Laboratory fee, \$6.00. Students may elect one of the following: folk and square, social, beginning modern, intermediate modern, dance composition. This area offers the student a variety of opportunities in the field of dance. The courses included give instruction in skill, style, and the creative aspect of dance and are designed to increase enjoyment, appreciation and understanding of dance.

**P. E. 8. Sports. (1)**

First and second semesters. Three hours a week. Laboratory fee, \$6.00. This area includes team and individual sports, recreational games, and outdoor education. Students may elect from the following: archery, badminton, basketball, bowling, camping and outing, canoeing, fencing, fishing, golf, hockey, recreational games, riding (see note), sailing, softball, tennis, trampoline, stunts and tumbling, and volleyball. These courses are planned to improve the skill of the individual and to increase enjoyment as a spectator and/or a participant.

Note: A special fee of \$26.00 is charged for riding instruction.

**PROFICIENCY EXAMINATION:** There is one exception to the above departmental requirement. Any student who feels she is proficient in one or more areas will be given the opportunity to take an examination to prove this fact. If she chooses to take it and passes she is then permitted to acquire her four credit hours of Physical Education in any area she wishes.

**COSTUME:** Each woman student is expected to provide herself with gymnasium costume consisting of dark green gabardine shorts, white slip-over blouse, white socks and tennis shoes. Leotards are usually worn in modern dance classes. This is optional.

**LOCKS AND LOCKERS:** A locker and lock are assigned to each girl at the first meeting of her class upon presentation of her University fee receipt. At the close of the last class each one is held responsible for cleaning out her locker and returning the lock.

**REQUIRED HEALTH EDUCATION COURSES FOR WOMEN**

All freshman women are required to complete one semester of Personal Health (Hea. 2) and one semester of Community Health (Hea. 4) for graduation. Students who demonstrate proficiency in personal health on the classification test are exempt from Hea. 2. These courses must be taken in consecutive order with Hea. 2 taken first. Transfer students who do not have credit in these courses, or their equivalent, must complete them or take them until graduation, whichever occurs first. These semester courses are designed to meet the functional health needs and interests of college women. The basic units of instruction have been evolved from present day scientific backgrounds. It is hoped that through these health courses the student will be better able to develop correct attitudes, habits and knowledges that will facilitate a more effective type of everyday living. Audio-visual aids, readings, reports, field trips, guest speakers, and special lectures help to enrich the class discussions. The University environment, the personal and group adjustment which the students must make are considered to form the core of these courses.

Women who have reached their thirtieth birthday are exempt from these courses.

## *Student Organizations*

### *Hea. 2. Personal Health. (2)*

First and second semesters. A course concerned primarily with health knowledge, attitudes and skills as they apply to the individual. Here consideration is given to basic overall concepts of health, nutrition, mental health, and preparation for family living.

### *Hea. 4. Community Health. (2)*

First and second semesters. A course designed to explore the magnitude of community health problems as they affect the individual. Basic units of instruction include chronic and communicable diseases, stimulants, and depressants, consumer health, problems of the aging, and health services on the local, state, national, and international levels.

## *Student Organizations Sponsored by the College*

**PHI ALPHA EPSILON:** Honorary Society of the College of Physical Education, Recreation, and Health.

The purpose of this organization is to recognize academic achievement and to promote professional growth by sponsoring activities in the fields of physical education, recreation, health, physical therapy, and related areas.

Students shall qualify for membership at such time as they shall have attained junior standing in physical education, health, recreation, or physical therapy, and have a minimum overall average of 2.7 and a minimum professional average of 3.1. Graduate students are invited to join upon passing the Master's qualifying examinations.

The organization is open to both men and women.

**WOMEN'S PROFESSIONAL CLUB:** All women students enrolled in the College are eligible for membership in this organization. It conducts various professional meetings, brings in speakers and promotes various co-recreational activities. It has sponsored trips to District and National conventions of the American Association for Health, Physical Education, and Recreation, and is chartered as a student major club of that organization.

**SIGMA TAU EPSILON:** This society, founded in 1940, selects those girls who have attained an overall 2.5 average and demonstrated outstanding leadership, service and sportsmanlike qualities in the organization and activities of the Women's Recreation Association and its affiliated groups.

**AQUALINERS:** This synchronized swimming club is open to all men and women registered in the University. Through weekly meetings the group concentrates on additional stroke perfection, individual and group stunts, diving, and experimentation with various types of accompaniment and choreographic techniques. An original water show is presented each spring and several demonstrations are given each year.

**MODERN DANCE GROUPS:** Men and women interested in modern dance concentrate on dance techniques and individual and group compositions. Members present a spring concert and perform in demonstrations on and off campus. Advanced and beginning groups meet weekly. No experience necessary for beginning club.

**GYMKANA TROUPE:** The Gymkana Troupe includes men and women students from all colleges that wish to express themselves through the medium of gymnastics. These individuals coordinate their talents in order to produce an exhibitional performance that has been seen in many places including Bermuda, Iceland, Azores, Idaho, Montana, and the Eastern Seaboard of the United States. The organization has three principal objectives: (1) to provide healthful, co-recreational activities that provide fun for the students during their leisure hours; (2) to promote gymnastics in this locality; (3) to entertain our students and people in other communities.

This organization is co-sponsored by the Physical Education Department and the Student Government Association; and it welcomes any student, regardless of the amount of experience, to join and to have fun.

**INTRAMURALS FOR MEN:** The Intramural Department offers an extensive opportunity for all men to participate in a recreational program of either individual or team sports. A variety of activities are available to fill the student's leisure time and develop skills which may be carried over into later life. Also, many desirable attributes, such as fair play, leadership, team work and sportsmanship, are encouraged and developed by the student participating in the program.

Leagues and tournaments are conducted in the following sports: touch football, horseshoe pitching, tennis, cross country, track and field, basketball, table tennis, badminton, boxing, wrestling, bowling, volleyball, swimming, foul shooting and softball.

Management and officiating in intramural sports are conducted by students majoring in physical education under the supervision of the Director of Intramurals and under policies and regulations established by the Intramural Council.

**WEIGHT LIFTING CLUB:** The University of Maryland Weight Lifting Club is open to all students and faculty for exercise with the weights throughout the week. A returnable deposit fee of \$5.00 is required.

The University of Maryland Olympic Barbell Club is a more highly organized group of the original Club. They hold bi-monthly meetings; assist in leadership; participate in competition; earn an award of recognition.

**WOMEN'S RECREATION ASSOCIATION:** *All women students of the University are members of the Women's Recreation Association*, an affiliate of the Athletic Recreation Federation of College Women. Under the leadership of its elected student officers and representatives and appointed sports managers, the WRA sponsors a full program of intramural, extramural, and interest group activities. These activities



seek to develop new interests and skills for leisure-time enjoyment, provide opportunities for continuing both old and new interests, and provide a democratic atmosphere for educational leadership experiences. Included are free and tournament play in archery, badminton, basketball, bowling, fencing, field hockey, golf, softball, swimming, table tennis, tennis, and volleyball; social events such as cookouts, square dancing, roller skating parties, etc.; and co-recreational activities in bowling, badminton, volleyball, etc. Intramural tournaments are organized through the dormitory, sorority, and "day dodger" groups of the University. Sports Days and Play Days with other colleges and universities enable the more skilled students to participate with others of similar abilities. Opportunities also are provided for officiating experiences and for the earning of official WNORC ratings in basketball, field hockey, swimming, tennis and volleyball.

Various special groups and clubs interested in recreation exist on campus outside the jurisdiction of the Women's Recreation Association and offer rich opportunities for the development of other recreational interests. Some of these are the Terrapin Trail Club, Ballroom Dance Club, Riding Club, Chess Club, Gymkana Troupe, Sailing Club, Ski Club, and musical and dramatic groups.



## FACULTY

1960-1961

### COLLEGE OF PHYSICAL EDUCATION, RECREATION, AND HEALTH

#### *Administrative Officer*

LESTER M. FRALEY, *Professor of Physical Education and Dean of College of Physical Education, Recreation and Health*  
A.B., Randolph-Macon College, 1928; M.A., Peabody College, 1937; PH.D., 1939.

#### *Professors*

DOROTHY F. DEACH, *Professor and Head, Department of Physical Education for Women*  
B.S., University of Illinois, 1931; M.S., 1932; PH.D., University of Michigan, 1951.

JAMES H. HUMPHREY, *Professor of Physical Education and Health*  
A.B., Denison University, 1933; A.M., Western Reserve University, 1946; ED.D., Boston University, 1951.

WARREN R. JOHNSON, *Professor of Physical Education and Health*  
B.A., University of Denver, 1942; M.A., 1947; ED.D., Boston University, 1950.

BENJAMIN H. MASSEY, *Professor of Physical Education*  
A.B., Erskine College, 1938; M.S., University of Illinois, 1947; PH.D., 1950.

DOROTHY R. MOHR, *Professor of Physical Education*  
B.S., University of Chicago, 1932; A.M., 1933; PH.D., University of Iowa, 1944.

#### *Associate Professors*

FRANK H. CRONIN, *Associate Professor of Physical Education; Head Golf Coach*  
B.S., University of Maryland, 1946.

MARVIN H. EYLER, *Associate Professor of Physical Education*  
A.B., Houghton College, 1942; M.S., University of Illinois, 1948; PH.D., 1956.

ELLEN E. HARVEY, *Associate Professor of Physical Education and Recreation*  
B.S., New College, Columbia University, 1935; M.A., Teachers College, Columbia University, 1941; ED.D., University of Oregon, 1951.

BURRIS F. HUSMAN, *Associate Professor of Physical Education*  
B.S., University of Illinois, 1941; M.S., 1948; ED.D., University of Maryland, 1954.

## Faculty

JAMES KEHOE, *Associate Professor of Physical Education, Director of Intramurals, and Head Track Coach*

B.S., University of Maryland, 1940.

H. BURTON SHIPLEY, *Associate Professor of Physical Education and Head Baseball Coach*

B.S., University of Maryland, 1934.

THERON A. TOMPKINS, *Associate Professor of Physical Education*

B.S., Eastern Michigan College of Education, 1926; M.A., University of Michigan, 1939.

GLADYS E. WADSWORTH, *Associate Professor and Head of the Department of Physical Therapy*

B.S., East Stroudsburg State Teacher's College, 1936; M.A., Columbia University, 1942; Certificate in Physical Therapy, Army Medical Department, 1943; PH.D., University of Maryland, 1955.

ALBERT A. WOODS, *Associate Professor of Physical Education*

B.S., University of Maryland, 1933; M.ED., 1949.

## Assistant Professors

WILLIAM R. CAMPBELL, *Assistant Professor of Physical Education and Head Swimming Coach*

B.S., Springfield College, 1949; M.ED., 1953.

HAROLD W. FREEMAN, *Assistant Professor of Physical Education*

B.S., Pennsylvania State University, 1942; M.A., New York University, 1948.

MARTHA J. HAVERSTICK, *Assistant Professor of Physical Education*

B.S., Pennsylvania State College, 1943; M.S., University of Wisconsin, 1950.

LOUISE S. HOWARTH, *Assistant Professor of Physical Education*

A.B., Breanau College, 1928; M.ED., University of Minnesota, 1949.

JOSEPHINE W. HUBBELL, *Assistant Professor of Health Education*

B.S., William and Mary College, 1947; M.A., State University of Iowa, 1948; PH.D., New York University, 1956.

GEORGE P. KRAMER, *Assistant Professor of Physical Education*

B.S., University of Maryland, 1953; M.A., 1956.

WILLIAM E. KROUSE, *Assistant Professor of Physical Education and Head Wrestling Coach*

B.S., University of Maryland, 1942; M.ED., 1949.

JACK S. LOWDER, *Assistant Professor of Physical Education*

B.S., Wake Forest, 1950; M.E., University of North Carolina, 1955.

DOROTHY G. MADDEN, *Assistant Professor of Physical Education*

A.B., Middlebury College, 1936; M.A., Syracuse University, 1937.

DORIS TERRY, *Assistant Professor of Health Education*

B.S., Western Kentucky State College, 1949; M.S., University of Indiana, 1952;  
M.P.H., University of North Carolina, 1958.

### *Instructors*

M. JOSEPHINE GAINES, *Instructor of Health Education*

B.S., University of California, Los Angeles, 1949; M.A., New York University, 1952.

DOROTHY HAMBERG, *Instructor of Physical Education*

B.S.E., Arkansas State Teachers College, 1946; M.E., University of Arkansas, 1951.

MARY R. HARRINGTON, *Instructor of Physical Education*

B.S., College of William and Mary, 1949; M.A., New York University, 1951.

ETHEL KESLER, *Instructor of Physical Education*

B.S., Woman's College, University of North Carolina, 1949; M.S., Wellesley College, 1953.

MARY LOUISE MOSELEY, *Instructor of Physical Education*

B.S., Limestone College, 1945; M.ED., Woman's College, University of North Carolina, 1959.

ELEANOR BRYAN SANDERSON, *Instructor of Physical Education*

B.S., East Carolina College, 1955; M.ED., Woman's College, University of North Carolina, 1959.

CAROL H. SMITH, *Instructor of Physical Education*

B.S., Brooklyn College, 1954; M.S., University of Michigan, 1956.

DONALD H. STEEL, *Instructor of Physical Education*

B.S., Trenton State Teachers College, 1955; M.A., University of Maryland, 1957.

WESLEY A. STICKNEY, *Instructor of Physical Education*

B.S., Seattle Pacific College, 1946; B.ED., Seattle Pacific College, 1952.

PAULINE THOMAS, *Instructor of Physical Education*

B.S., Cortland State Teachers College, 1954; M.A., University of Maryland, 1958.

MARGARET TIFFT, *Instructor of Health Education*

B.S., Ohio State University, 1946; M.A., Columbia University, 1948.

### *Lecturers*

W. W. COBEY, *Associate Professor, Director of Athletics*

A.B., University of Maryland, 1930.

H. A. MILLIKAN, *Associate Professor and Head Basketball Coach*

B.S., Oklahoma A. & M. College, 1943.

ALFRED J. WYRE, *Head Trainer*













DEPARTMENT  
of  
AIR SCIENCE

Catalog Series 1960-1961



UNIVERSITY OF MARYLAND

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Bulletin of the University of Maryland published eight times in January; five times in February; three times in May and September; twice in March, July and November; once in April, June, August, October, and December.

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# UNIVERSITY CALENDAR

## FALL SEMESTER 1959

### JANUARY 1960

- 4 Monday—Christmas Recess Ends 8 a.m.
- 20 Wednesday—Pre-Examination Study Day
- 21-27 Thursday to Wednesday, inclusive—Fall Semester Examinations

## SPRING SEMESTER 1960

### FEBRUARY

- 1-5 Monday to Friday—Spring Semester Registration
- 8 Monday—Instruction Begins
- 22 Monday—Washington's Birthday Holiday

### MARCH

- 25 Friday—Maryland Day

### APRIL

- 14 Thursday—Easter Recess Begins After Last Class
- 19 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 18 Wednesday—Military Day
- 26 Thursday—Pre-Examination Study Day

- May 27- }  
June 3 } Friday to Friday, inclusive—Spring Semester Examinations
- 29 Sunday—Baccalaureate Exercises
- 30 Monday—Memorial Day, Holiday

### JUNE

- 4 Saturday—Commencement Exercises

## SUMMER SESSION 1960

### JUNE 1960

- 27 Monday—Summer Session Registration
- 28 Tuesday—Summer Session Begins

### AUGUST

- 5 Friday—Summer Session Ends

## SHORT COURSES 1960

### JUNE 1960

- 20-25 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 8-13 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 6-9 Tuesday to Friday—Firemen's Short Course

# UNIVERSITY CALENDAR

## FALL SEMESTER 1960

### SEPTEMBER

- 12-16 Monday to Friday—Fall Semester Registration
- 19 Monday—Instruction Begins

### NOVEMBER

- 23 Wednesday—Thanksgiving Recess Begins After Last Class
- 28 Monday—Thanksgiving Recess Ends 8 a.m.

### DECEMBER

- 20 Tuesday—Christmas Recess Begins

### JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.
- 20 Friday—Inauguration Day Holiday
- 25 Wednesday—Pre-Examination Study Day

Jan. 26- } Thursday to Wednesday, inclusive—Fall Semester Examinations  
Feb. 1 }

## SPRING SEMESTER 1961

### FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration
- 13 Monday—Instruction Begins
- 22 Wednesday—Washington's Birthday Holiday

### MARCH

- 25 Saturday—Maryland Day
- 30 Thursday—Easter Recess Begins After Last Class

### APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 17 Wednesday—Military Day
- 30 Tuesday—Memorial Day, Holiday

### JUNE

- 2 Friday—Pre-Examination Study Day
- 3-9 Saturday to Friday, inclusive—Spring Semester Examinations
- 4 Sunday—Baccalaureate Exercises
- 10 Saturday—Commencement Exercises

## SUMMER SESSION 1961

### JUNE 1961

- 26 Monday—Summer Session Registration
- 27 Tuesday—Summer Session Begins

### AUGUST

- 4 Friday—Summer Session Ends

## SHORT COURSES 1961

### JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 7-12 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

# BOARD OF REGENTS

## and

### MARYLAND STATE BOARD OF AGRICULTURE

	<i>Term Expires</i>
CHARLES P. McCORMICK <i>Chairman</i> .....	1966
McCormick and Company, 414 Light Street, Baltimore 2	
EDWARD F. HOLTER <i>Vice-Chairman</i> .....	1968
The National Grange, 744 Jackson Place, N.W., Washington 6	
B. HERBERT BROWN <i>Secretary</i> .....	1960
The Baltimore Institute, 10 West Chase Street, Baltimore 1	
HARRY H. NUTTLE <i>Treasurer</i> .....	1966
Denton	
LOUIS L. KAPLAN <i>Assistant Secretary</i> .....	1961
5800 Park Heights Avenue, Baltimore 15	
ENOS S. STOCKBRIDGE <i>Assistant Treasurer</i> .....	1960
10 Light Street, Baltimore 2	
THOMAS W. PANGBORN .....	1965
The Pangborn Corporation, Pangborn Blvd., Hagerstown	
THOMAS B. SYMONS .....	1963
Suburban Trust Company, 6950 Carroll Avenue, Takoma Park	
C. EWING TUTTLE .....	1962
907 Latrobe Building, Charles and Read Streets, Baltimore 2	
WILLIAM C. WALSH .....	1968
Liberty Trust Building, Cumberland	
MRS. JOHN L. WHITEHURST .....	1967
4101 Greenway, Baltimore 18	

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Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

## OFFICERS OF ADMINISTRATION

### *Principal Administrative Officers*

WILSON H. ELKINS, *President*

B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936;  
D. PHIL., 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBAKE, *Dean of the Faculty*

B.S., State Teachers College, California, Pa., 1934; M.A., Ohio State University, 1936;  
PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

### *Emeritus*

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

### *Administrative Officers of the Schools and Colleges*

MYRON S. AISENBERG, *Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland, 1932; PH.D., 1933.



- LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health*  
B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.
- FLORENCE M. GIPE, *Dean of the School of Nursing*  
B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; ED.D., University of Maryland, 1952.
- LADISLAUS F. GRAPSKI, *Director of the University Hospital*  
R.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University of Denver, 1942; M.B.A. in Hospital Administration, University of Chicago, 1943.
- IRVIN C. HAUT, *Director, Agricultural Experiment Station and Head, Department of Horticulture*  
B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D., University of Maryland, 1933.
- ROGER HOWELL, *Dean of the School of Law*  
B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland, 1917.
- WILBERT J. HUFF, *Director, Engineering Experiment Station*  
B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale University, 1917; D.SC. (HON.), Ohio Northern University, 1927.
- SELMA F. LIPPEATT, *Dean of the College of Home Economics*  
B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945; PH.D., Pennsylvania State University, 1953.
- FREDERIC T. MAVIS, *Dean of the College of Engineering*  
B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.
- PAUL E. NYSTROM, *Director, Agricultural Extension Service*  
B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A., Harvard University, 1948; D.P.A., 1951.
- J. FREEMAN PYLE, *Dean of the College of Business and Public Administration*  
PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.
- LEON P. SMITH, *Dean of the College of Arts and Sciences*  
B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930; Diplome le l'Institut de Touraine, 1932.
- WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical Education and Research*  
B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929; PH.D., (HON.), University of Louisville, 1946.

### *General Administrative Officers*

- G. WATSON ALGIRE, *Director of Admissions and Registrations*  
B.A., University of Maryland, 1930; M.S., 1931.
- THEODORE R. AYLESWORTH, *Professor of Air Science and Head, Department of Air Science*  
B.S., Mansfield State Teachers College, 1936; M.S., University of Pennsylvania, 1949.

- NORMA J. AZLEIN, *Registrar*  
B.A., University of Chicago, 1940.
- B. JAMES BORRESON, *Executive Dean for Student Life*  
B.A., University of Minnesota, 1944.
- DAVID L. BRIGHAM, *Director of Alumni Relations*  
B.A., University of Maryland, 1938.
- C. WILBUR CISSEL, *Director of Finance and Business*  
B.A., University of Maryland, 1932; M.A., 1934; C.P.A., 1939.
- WILLIAM W. COBEY, *Director of Athletics*  
A.B., University of Maryland, 1930.
- LESTER M. DYKE, *Director of Student Health Service*  
B.S., University of Iowa, 1936; M.D., University of Iowa, 1926.
- GEARY F. EPPLEY, *Dean of Men*  
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.
- GEORGE W. FOGG, *Director of Personnel*  
B.A., University of Maryland, 1926; M.A., 1928.
- ROBERT J. MCCARTNEY, *Director of University Relations*  
B.A., University of Massachusetts, 1941.
- GEORGE W. MORRISON, *Associate Director and Supervising Engineer Physical Plant (Baltimore)*  
B.S., University of Maryland, 1927; E.E., 1931.
- HOWARD ROVELSTAD, *Director of Libraries*  
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.
- ADELE H. STAMP, *Dean of Women*  
B.A., Tulane University, 1921; M.A., University of Maryland, 1924.
- GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*  
B.S., University of Maryland, 1933.

### *Division Chairmen*

- JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*  
B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.
- HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*  
B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.
- WILBERT J. HUFF, *Chairman of the Division of Physical Sciences*  
B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale University, 1917; D.SC., (HON.), Ohio Northern University, 1927.
- CHARLES E. WHITE, *Chairman of the Lower Division*  
B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.
- ADOLF E. ZUCKER, *Chairman of the Division of Humanities*  
B.S., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.

# CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

## GENERAL COMMITTEE ON EDUCATIONAL POLICY

Dr. Ronald Bamford (Graduate School), *Chairman*

## COMMITTEE ON ADMISSIONS

Dr. Russell G. Brown (Agriculture), *Chairman*

## COMMITTEE ON INSTRUCTIONAL PROCEDURES

Dr. Ronald Bamford (Graduate School), *Chairman*

## COMMITTEE ON SCHEDULING AND REGISTRATION

Dr. Robert Rappleye (Agriculture), *Chairman*

## COMMITTEE ON PROGRAMS, CURRICULA AND COURSES

Dr. Irvin C. Haut (Graduate School), *Chairman*

## COMMITTEE ON SCHOLARSHIPS AND GRANTS-IN-AID

Dr. Paul Nystrom (Agriculture), *Chairman*

## COMMITTEE ON FACULTY RESEARCH

Dr. Edward J. Herbst (Medicine), *Chairman*

## COMMITTEE ON PUBLIC FUNCTIONS AND COMMENCEMENTS

Mr. B. James Borreson (Executive Dean for Student Life), *Chairman*

## COMMITTEE ON LIBRARIES

Dr. Charles Murphy (Arts and Sciences), *Chairman*

## COMMITTEE ON UNIVERSITY PUBLICATIONS

Dr. Charles A. Taff (Business and Public Administration), *Chairman*

## COMMITTEE ON STUDENT LIFE AND ACTIVITIES

Dr. L. Morris McClure (Education), *Chairman*

## COMMITTEE ON STUDENT PUBLICATIONS AND COMMUNICATIONS

Dr. Franklin Cooley (Arts and Sciences), *Chairman*

## COMMITTEE ON STUDENT DISCIPLINE

Dr. Allan J. Fisher (Business and Public Administration), *Chairman*

## COMMITTEE ON RELIGIOUS LIFE

Professor Louis E. Otts (Engineering), *Chairman*

## COMMITTEE ON STUDENT HEALTH AND WELFARE

Dr. Marvin H. Eyler (Physical Education), *Chairman*

## COMMITTEE ON STUDENT EMPLOYMENT AND SELF-HELP

Dr. Warren R. Johnson (Physical Education), *Chairman*

## COMMITTEE ON INTERCOLLEGIATE COMPETITION

Dr. Clyde S. Shaffner (Agriculture), *Chairman*

## COMMITTEE ON PROFESSIONAL ETHICS, ACADEMIC FREEDOM AND TENURE

Dr. Peter Lejins (Arts and Sciences), *Chairman*

## COMMITTEE ON APPOINTMENTS, PROMOTIONS AND SALARIES

Dr. William E. Bickley (Agriculture), *Chairman*

## COMMITTEE ON FACULTY LIFE AND WELFARE

Dr. Guy B. Hathorn (Business and Public Administration), *Chairman*

## COMMITTEE ON MEMBERSHIP AND REPRESENTATION

Dr. Joseph C. Biddix (Dentistry), *Chairman*

## THE DEPARTMENT OF AIR SCIENCE

THE DEPARTMENT OF AIR SCIENCE PROVIDES, IN THE TWO-YEAR COURSE termed Basic Air Science, a foundation for leadership and air age citizenship. The second two years of instruction (together with four weeks of summer training at the end of the junior year) termed Advanced Air Science, builds upon the foundation in further developing upper classmen who are to become Air Force Officers.

Instruction in Air and/or Military Science has been an important phase of instruction at the University of Maryland since 1856. In 1864 the General Assembly of Maryland accepted the provisions of the Act of Congress of 1862 whereby public lands were donated to the States providing colleges in which a course of military training was maintained. Until 1916 the institution was a military school. After World War I the military training was reorganized and given as specified in the Acts of Congress of 1916 and 1920, as amended, which are commonly known as the National Defense Acts. Under these laws the Reserve Officers Training Corps is organized to provide basic training and to offer advanced training leading to a commission in the United States Air Force Reserve.

All male students, unless specifically exempted, under University rules are required to engage in Air Science instruction for a period of two years. This is a prerequisite for graduation and must be taken by all eligible students in their first two years of attendance whether they intend to graduate or not. Students of the University, regardless of college in which registered, who successfully complete the Basic Course, may apply for admission to the Advanced Course.

The mission of the Advanced Reserve Officers Training Corps Program is to produce junior officers who have the qualities and attributes essential to their progressive and continued development as officers in the United States Air Force. The major mission is the training of candidates for commissioned service as pilots, observers, and technical and administrative officers in the United States Air Force Reserve. In addition, the Advanced Air Force Reserve Officers Training Corps Program will provide the principal source for procurement of junior officers for the Regular Air Force since many of the Reserve Officers apply for and are appointed as Regular Officers.

Air Force personnel approved by the President of the University, are detailed by the Department of the Air Force to administer these programs. Officers serve under appointment by the University as Professor or Assistant Professor of Air Science.

The Armory located east of the Administration Building has been declared by a Department of the Air Force inspector to be one of the finest buildings used for Air Science instruction in the country. It contains clothing storerooms,



## *General Information*

### Air Science Instruction For Women

Women may take Air Science instruction as an elective subject. They will participate fully in the classroom instruction and in Leadership Laboratory. The Air Force W.A.F. uniform may be worn, but must be purchased by the individual student. Permission to take Air Science must be obtained from the Dean of Women as well as the dean of the student's college.

### General

#### UNIFORMS

All cadets must appear in proper uniform at all Leadership Laboratory formations and at such other times as the PAS may designate. Uniforms for cadets in the Basic Course are furnished by the University of Maryland. They are purchased from an allowance provided by the United States Air Force. The uniforms are the regulation uniforms of the United States Air Force, with certain distinguishing features. Such uniforms must be kept in good condition by the cadets. The uniforms will not be worn in part, nor used while the wearer is engaged in athletic activity. The uniforms issued to Basic Course Cadets will be returned to the University of Maryland Property Custodian in the Department of Air Science at the end of the year, or before, if a student severs his connection with the Department.

The Advanced Course cadets will wear an officer-type uniform, purchased on a Federal Government Allowance.

#### COMMUTATION

All members of the Advanced Course will receive a monetary allowance in lieu of subsistence, equivalent to the current value of the garrison ration, to be paid quarterly during the periods of enrollment in the Advanced Course, less the period of the summer camp of four weeks. During this camp the student will receive the pay of the seventh enlisted grade as well as travel pay to and from camp. The total period of commutation will not exceed 609 days for any cadet. This allowance may be paid in addition to benefits authorized by the GI Bill of Rights.

#### ACADEMIC INSTRUCTION

Air Science instruction offered by the Department of Air Science is on a par with other University work, and the requirements of this Department as to proficiency are the same as those of other departments. Academic elective credits are given in all colleges for the Advanced Air Science Course.

Students who have received R.O.T.C. training at any other educational institution under the direction of officers detailed as Professor of Military Science and Tactics, Professor of Air Science, and Professor of Naval Science, may receive such credit as applicable Air Force Regulations allow.



#### AIR FORCE RESERVE OFFICER TRAINING CORPS BAND

The A.F.R.O.T.C. Band is composed of Basic Cadets who are members of the University of Maryland Band. Both the A.F.R.O.T.C. Band and the University of Maryland Band function under the Department of Music. The Cadet Band practices during leadership laboratory periods and plays for cadet formations and functions. Basic A.F.R.O.T.C. uniforms are worn by band members while participating in the Cadet Band.

#### UNIVERSITY AND AIR FORCE RESERVE OFFICER TRAINING CORPS RIFLE TEAMS

The University's rifle teams are under the supervision of the Department of Air Science. Rifle shooting at the University of Maryland is rated as a major sport activity, and varsity letters and sweaters are awarded to team members. The rifle teams representing this institution have achieved a high national standing for they have consistently placed at the top brackets in the National Intercollegiate Rifle Match. The Varsity Rifle Team won the National Intercollegiate Championship in 1947, 1949, 1953 and 1954. The Intercollegiate record score of 1442 was established in 1953. The A.F.R.O.T.C. Team has been a consistent winner in the William Randolph Hearst Trophy Match and the Secretary of the Air Force A.F.R.O.T.C. Rifle Match. The teams have consistently won a very high percentage of the regularly scheduled postal and shoulder matches. Rifles and ammunition are furnished by the State and Federal Governments, and the rifle range in the Armory used by the team has been pronounced by officials of the National Rifle Association to be among the finest in the country.

Both a Varsity Team and a Freshman Team are placed in intercollegiate competition, with members of the latter team being awarded class numerals. Cadets on the A.F.R.O.T.C. Rifle team receive badges, ribbons and medals for their performance on the team.

#### A.F.R.O.T.C. FLIGHT INSTRUCTION PROGRAM

Under the Flight Instruction Program, advanced A.F.R.O.T.C. cadets who are scheduled to become pilots in the United States Air Force are given the opportunity to obtain a Private Pilots license in a light airplane. The cadet is given 36½ hours of flight instruction by a civilian flying school under contract to the U.S. Air Force. All costs are borne by the U.S. Air Force. In addition, the cadet receives 35 hours of ground instruction by members of the Department of Air Science. Additional hours of instruction are given as required by a Federal Aviation Agency representative. The purpose of the FIP is to (1) increase interest in a flying career in the U.S. Air Force and (2) to determine, prior to entry on active duty, the capabilities of pilot trainees.

#### Honors and Awards presented to Air Science Students

**AIR FORCE ASSOCIATION MEDAL**—This silver medal is awarded to the outstanding advanced cadet in the A.F.R.O.T.C. course who has demonstrated outstanding ability in scholastic grades, both general and military, in individual char-

## *Honors and Awards*

acteristics, and in performance during the period of summer camp.

**ALUMNI CUP**—The Alumni Association offers each year a cup to the Leader of the best drilled Flight in competitive drill.

**AMERICAN LEGION POST NO. 217 AWARD**—This award is presented to the senior advanced cadet who displays outstanding leadership.

**AMERICAN LEGION GOLD MEDAL**—The gold medal is awarded to the senior advanced cadet for academic achievement in leadership.

**ARMED FORCES COMMUNICATIONS MEDAL**—This medal is awarded to the senior advanced cadet in recognition of outstanding achievement in the field of electronics.

**ARNOLD AIR SOCIETY PLAQUE**—This plaque is awarded to the second year advanced cadet who has done the most to advance the A.F.R.O.T.C. interests and activities for the Arnold Air Society.

**CONSOLIDATED VULTEE AIRCRAFT CORPORATION AWARD**—This award is presented to the sophomore cadet displaying leadership ability and academic excellence.

**DISABLED AMERICAN VETERANS' GOLD CUP**—This cup is awarded to the senior advanced cadet who has displayed outstanding leadership, scholarship, and citizenship.

**DISTINGUISHED A.F.R.O.T.C. CADET AWARDS**—These awards are presented to senior cadets who have been outstanding in A.F.R.O.T.C. and who are outstanding in their academic major fields. Distinguished A.F.R.O.T.C. cadets are eligible to apply for regular Air Force commission.

**FRESHMAN DIVISION SILVER CUP**—Awarded by the Freshman Division, Department of Air Science to a freshman cadet for outstanding leadership, military bearing and aptitude and desire for an Air Force career.

**GOVERNOR'S CUP**—This cup is offered each year by His Excellency, the Governor of Maryland, to the best drilled squadron.

**HAMILL MEMORIAL PLAQUE**—This plaque, offered by the local chapter of Theta Chi Fraternity, is presented to the sophomore cadet excelling in leadership and scholarship.

**DISTINGUISHED A.F.R.O.T.C. GRADUATE**—Presented to distinguished cadets of the A.F.R.O.T.C. who continue to display outstanding academic and leadership qualities.

**A.F.R.O.T.C. ANGEL FLIGHT AWARD**—Presented to the most outstanding member of the Angel Flight.

**CHARLES H. DICKINSON MEMORIAL PLAQUE**—Offered by the Veterans Club, University of Maryland, to the junior cadet who has shown leadership ability, outstanding individual characteristics of military bearing.

**VANDENBERG GUARD AWARD**—Presented to the member displaying most leadership ability.

**GLENN L. MARTIN AERONAUTICAL ENGINEERING AWARD**—This award is presented for academic excellence in the field of aeronautical engineering to a senior advanced cadet who has applied for flight training.

**MARYLAND STATE SOCIETY DAUGHTERS OF FOUNDERS AND PATRIOTS OF AMERICA AWARD**—This award is presented to the freshman cadet attaining the highest over-all academic grades.

**MILITARY ORDER OF WORLD WARS AWARD**—Presented by the Military Order of World Wars to the outstanding graduate of the Non-Commissioned Officers' Academy of the University of Maryland Cadet Corps.

**NATIONAL DEFENSE TRANSPORTATION ASSOCIATION AWARD**—This organization offers a citation in recognition of leadership qualities, academic standing, aptitude for military service, and noteworthy service in furtherance of the aims and objectives of the Association in promoting preparedness for the national defense of the United States.

**PERSHING RIFLE REGIMENTAL MEDAL**—Presented to the member of Pershing Rifles who shows outstanding service to the company.

**PERSHING RIFLE SILVER AND BRONZE MEDALS**—The Pershing Rifle Company presents these medals to the most outstanding first and second year basic cadets who are members of the Pershing Rifles.

**PERSHING RIFLE AWARD**—Medal presented by Pershing Rifle Company to the best drilled cadet of the corps who is not a member of Pershing Rifles.

**PERSHING RIFLE GOLD MEDAL**—This medal is awarded to the outstanding member of the Pershing Rifles.

**REILEY MEMORIAL PLAQUE**—Presented by the family of George M. Reiley, Jr., to the member of the Flight Instruction Program showing the most aptitude for flying.

**RESERVE OFFICERS ASSOCIATION SENIOR AWARD**—Presented to the outstanding senior cadet of the Corps of Cadets.

**RESERVE OFFICERS ASSOCIATION MEDALS**—Three medals, gold, silver, and bronze, are presented by this association to three cadets demonstrating outstanding academic achievement in the A.F.R.O.T.C. and in other studies.

**RESERVE OFFICERS ASSOCIATION RIBBONS**—The Air Force Reserve Officers Association presents ribbons to the 40 outstanding freshman cadets, the 30 outstanding sophomore cadets, and to 10 outstanding juniors.

**SCABBARD AND BLADE COBLENTZ MEMORIAL CUP**—This cup awarded to the Commander of the winning squadron in drill competition.

## *Honors and Awards*

SOCIETY OF AMERICAN MILITARY ENGINEERS AWARD OF MERIT—Presented to the senior cadet displaying outstanding scholastic achievement and leadership and majoring in the field of engineering.

SONS OF THE AMERICAN REVOLUTION AWARD—This award is presented to the senior advanced cadet who exhibits in his work a high degree of merit with respect to leadership, military bearing, and excellence in his academic course of study.

SUN NEWSPAPER AWARD—This award is presented to a basic cadet in recognition of being the best drilled basic cadet in competitive drill.

## COURSE OFFERINGS

A course with a single number extends through one semester. A course with a double number extends through two semesters.

Courses not otherwise designated are lecture courses. The number of hours credit is shown by the arabic numeral in parentheses after the title of the course.

A separate schedule of courses is issued each semester, giving the hours, places of meeting, and other information required by the student in making out his program.

### *A.S. 1, 2. First Year Basic Air Science. (2, 2.)*

Two one-hour periods of class instruction; one one-hour Leadership Laboratory period. A general survey of air power designed to provide the student with an understanding of the elements of air power, to include civil and general aviation, research and development, aerodynamics, control and navigation, propulsion systems and space vehicles. Students are introduced to the military as an instrument of national security, and to professional opportunities in the United States Air Force.

### *A.S. 3, 4. Second Year Basic Air Science. (2, 2.)*

Two one hour periods of class instruction; one one-hour period of Leadership Laboratory. A more advanced consideration of air power as exemplified by the combat operational capabilities of the United States Air Force, to include: the evolution of aerial warfare, the elements of aerial warfare and the present and future employment of Air Forces, including operations in space.

### *A.S. 101, 102. First Year Advanced Air Science. (3, 3.)*

Four one-hour periods of class instruction; one one-hour period of Leadership Laboratory per week. Introduces advanced Air Force R. O. T. C. cadets to the principles of leadership and functions of command as they may be applied to current and future problems in the United States Air Force. Provides an understanding of behavioral and communication skills and the scientific method of problem solving as they may be employed in Air Force command and staff problems. Introduces the military justice system, military correspondence, and instructional procedures and techniques as they are used in the United States Air Force today. Includes leadership laboratory opportunities to apply socio-psychological principles of leadership for the development of the cadet's potential in realistic problem situations.

### *A.S. 103, 104. Second Year Advanced Air Science. (3, 3)*

Four one-hour periods of class instruction; one one-hour period of Leadership Laboratory. A study of global relationships of special concern to the Air Force officer with attention to such aspects as weather, navigation, geography and international relations. Aims at an understanding of the significance of the inter-relationship of economic, political, geographic and social factors of national strength and international power patterns. Includes: summer training critique, career guidance, military aspects of world political geography and military aviation, and briefing for commissioned service.



FACULTY  
1960-1961  
DEPARTMENT OF AIR SCIENCE

*Administrative Officer*

THEODORE R. AYLESWORTH, *Professor of Air Science and Head of Department of Air Science*  
*Colonel, United States Air Force*  
B.S., Mansfield State Teachers College, Pennsylvania, 1936; M.S., University of Pennsylvania, 1949.

*Associate Professor*

LOUIS W. CRACKEN, *Associate Professor of Air Science*  
*Major, United States Air Force*  
A.B., University of Denver, 1954; M.A., George Washington University, 1956.

*Assistant Professors*

HENRY A. WALKER, *Assistant Professor of Air Science and Commandant of Cadets*  
*Lt. Colonel, United States Air Force*  
B.S., University of Massachusetts, 1934; ED.M., Harvard University, 1939.

DAVID E. AMBROSE, *Assistant Professor of Air Science*  
*Major, United States Air Force*  
A.B., Johns Hopkins University, 1949.

DAVID R. BROWN, *Assistant Professor of Air Science*  
*Major, United States Air Force*  
B.S., University of Maryland, 1956.

JAMES F. CASEY, *Assistant Professor of Air Science*  
*Major, United States Air Force*  
B.S., University of Colorado, 1951.

CASIMIR F. HYBKI, JR., *Assistant Professor of Air Science*  
*Major, United States Air Force*  
B.S., University of Maryland, 1957.

RICHARD L. GRIBLING, *Assistant Professor of Air Science*  
*Major, United States Air Force*  
B.S., University of California, 1948.

FRANK W. LITTLETON, JR., *Assistant Professor of Air Science*  
*Major, United States Air Force*  
A.B., Sacramento State College, 1951.

JAMES J. CANTLON, *Assistant Professor of Air Science*  
*Captain, United States Air Force*  
B.S., University of Notre Dame, 1950.

CECIL J. DOTSON, Assistant Professor of Air Science  
 Captain, United States Air Force  
 B.L.B., University of Maryland, 1950.

JOHN C. DUNN, Assistant Professor of Air Science  
 Captain, United States Air Force  
 B.S., Boston University, 1949.

BRADLEY R. FOSTER, Assistant Professor of Air Science  
 Captain, United States Air Force  
 B.S., American University, 1953; M.A., 1955.

WILLIAM R. GRAHAM, Assistant Professor of Air Science  
 Captain, United States Air Force  
 B.S., University of Maryland, 1952.

RALPH W. HALLA, Assistant Professor of Air Science  
 Captain, United States Air Force  
 B.S., Georgetown University, 1950.

IRVIN L. KLINGENBERG, JR., Assistant Professor of Air Science  
 Captain, United States Air Force  
 B.S., University of Maryland, 1952.

ALLEN D. MAXWELL, Assistant Professor of Air Science  
 Captain, United States Air Force  
 A.B., American University, 1959.

DAVID H. E. OPFER, Assistant Professor of Air Science  
 Captain, United States Air Force  
 B.S., University of Maryland, 1959.

JOHN W. PERDUE, Assistant Professor of Air Science  
 Captain, United States Air Force  
 University of Maryland.

RICHARD H. PERLICH, Assistant Professor of Air Science  
 Captain, United States Air Force  
 University of Maryland.

MAURICE C. SLUSS, Assistant Professor of Air Science  
 Captain, United States Air Force  
 B.S., United States Naval Academy, 1953.

THOMAS F. THAMANN, Assistant Professor of Air Science  
 Captain, United States Air Force  
 B.A., University of Cincinnati, 1951.

DONALD W. CORRICK, Assistant Professor of Air Science  
 First Lieutenant, United States Air Force  
 B.S., University of Maryland, 1953.

## *Faculty*

### *Instructors*

ROBERT C. BROWN, *Instructor, Department of Air Science*  
*M/Sgt., United States Air Force*

GEORGE M. MARTIN, *Instructor, Department of Air Science*  
*M/Sgt., United States Air Force*

GEORGE W. BURKE, *Instructor, Department of Air Science*  
*T/Sgt., United States Air Force*

KENNETH F. MULLEDY, *Instructor, Department of Air Science*  
*T/Sgt., United States Air Force*

DAVID P. PRUITT, JR., *Instructor, Department of Air Science*  
*T/Sgt., United States Air Force*

WILLIAM G. RICHARDSON, *Instructor, Department of Air Science*  
*T/Sgt., United States Air Force*

DONALD D. BLEVINS, *Instructor, Department of Air Science*  
*S/Sgt., United States Air Force*

HOWARD V. DOVE, *Instructor, Department of Air Science*  
*S/Sgt., United States Air Force*

WILLIAM A. HOLLAND, *Instructor, Department of Air Science*  
*S/Sgt., United States Air Force*

HAL A. LACY, *Instructor, Department of Air Science*  
*S/Sgt., United States Air Force*

WILLIAM F. MAYNE, *Instructor, Department of Air Science*  
*S/Sgt., United States Air Force*

JOHN E. SCHMIDT, JR., *Instructor, Department of Air Science*  
*S/Sgt., United States Air Force*

FREDERICK J. SMITH, *Instructor, Department of Air Science*  
*S/Sgt., United States Air Force*







# UNIVERSITY COLLEGE

Catalog Series 1959-1961



## UNIVERSITY OF MARYLAND

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# UNIVERSITY CALENDAR

## FALL SEMESTER 1959

### SEPTEMBER

- 14-18 Monday to Friday—Fall Semester Registration
- 21 Monday—Instruction Begins

### NOVEMBER

- 25 Wednesday—Thanksgiving Recess Begins After Last Class
- 30 Monday—Thanksgiving Recess Ends 8 a.m.

### DECEMBER

- 19 Saturday—Christmas Recess Begins After Last Class

### JANUARY 1960

- 4 Monday—Christmas Recess Ends 8 a.m.
- 20 Wednesday—Pre-Examination Study Day
- 21-27 Thursday to Wednesday, inclusive—Fall Semester Examinations

## SPRING SEMESTER 1960

### FEBRUARY

- 1-5 Monday to Friday—Spring Semester Registration
- 8 Monday—Instruction Begins
- 22 Monday—Washington's Birthday Holiday

### MARCH

- 25 Friday—Maryland Day

### APRIL

- 14 Thursday—Easter Recess Begins After Last Class
- 19 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 18 Wednesday—Military Day
- 26 Thursday—Pre-Examination Study Day
- May 27- } Friday to Friday, inclusive—Spring Semester Examinations
- June 3 }
- 29 Sunday—Baccalaureate Exercises
- 30 Monday—Memorial Day, Holiday

### JUNE

- 4 Saturday—Commencement Exercises

## SUMMER SESSION 1960

### JUNE 1960

- 20 Monday—Summer Session Registration
- 21 Tuesday—Summer Session Begins

### JULY

- 29 Friday—Summer Session Ends

## SHORT COURSES 1960

### JUNE 1960

- 13-18 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 1-6 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 6-9 Tuesday to Friday—Firemen's Short Course



# UNIVERSITY CALENDAR

## FALL SEMESTER 1960

### SEPTEMBER

- 12-16 Monday to Friday—Fall Semester Registration  
19 Monday—Instruction Begins

### NOVEMBER

- 23 Wednesday—Thanksgiving Recess Begins After Last Class  
28 Monday—Thanksgiving Recess Ends 8 a.m.

### DECEMBER

- 20 Tuesday—Christmas Recess Begins

### JANUARY 1961

- 3 Tuesday—Christmas Recess Ends 8 a.m.  
20 Friday—Inauguration Day Holiday  
25 Wednesday—Pre-Examination Study Day

- Jan. 26- } Thursday to Wednesday, inclusive—Fall Semester Examinations  
Feb. 1 }

## SPRING SEMESTER 1961

### FEBRUARY

- 6-10 Monday to Friday—Spring Semester Registration  
13 Monday—Instruction Begins  
22 Wednesday—Washington's Birthday Holiday

### MARCH

- 25 Saturday—Maryland Day  
30 Thursday—Easter Recess Begins After Last Class

### APRIL

- 4 Tuesday—Easter Recess Ends 8 a.m.

### MAY

- 17 Wednesday—Military Day  
30 Tuesday—Memorial Day, Holiday

### JUNE

- 2 Friday—Pre-Examination Study Day  
3-9 Saturday to Friday, inclusive—Spring Semester Examinations  
10 Saturday—Commencement Exercises

## SUMMER SESSION 1961

### JUNE 1961

- 26 Monday—Summer Session Registration  
27 Tuesday—Summer Session Begins

### AUGUST

- 4 Friday—Summer Session Ends

## SHORT COURSES 1961

### JUNE 1961

- 19-24 Monday to Saturday—Rural Women's Short Course

### AUGUST

- 7-12 Monday to Saturday—4-H Club Week

### SEPTEMBER

- 5-8 Tuesday to Friday—Firemen's Short Course

# BOARD OF REGENTS

and

## MARYLAND STATE BOARD OF AGRICULTURE

CHARLES P. McCORMICK

*Term  
Expires*

*Chairman* ..... 1966  
McCormick and Company, 414 Light Street, Baltimore 2

EDWARD F. HOLTER

*Vice-Chairman* ..... 1968  
The National Grange, 744 Jackson Place, N.W., Washington 6

B. HERBERT BROWN

*Secretary* ..... 1960  
The Baltimore Institute, 10 West Chase Street, Baltimore 1

HARRY H. NUTTLE

*Treasurer* ..... 1966  
Denton

LOUIS L. KAPLAN

*Assistant Secretary* ..... 1961  
5800 Park Heights Avenue, Baltimore 15

ENOS S. STOCKBRIDGE

*Assistant Treasurer* ..... 1960  
10 Light Street, Baltimore 2

THOMAS W. PANGBORN ..... 1965

The Pangborn Corporation, Pangborn Blvd., Hagerstown

THOMAS B. SYMONS ..... 1963

Suburban Trust Company, 6590 Carroll Avenue, Takoma Park

C. EWING TUTTLE ..... 1962

907 Latrobe Building, Charles and Read Streets, Baltimore 2

WILLIAM C. WALSH ..... 1968

Liberty Trust Building, Cumberland

MRS. JOHN L. WHITEHURST ..... 1967

4101 Greenway, Baltimore 18

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Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

The State law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture.

# OFFICERS OF ADMINISTRATION

## *Principal Administrative Officers*

WILSON H. ELKINS, *President*

B.A., University of Texas, 1932; M.A., 1932; B.LITT., Oxford University, 1936; D.PHIL., 1936.

ALBIN O. KUHN, *Executive Vice President*

B.S., University of Maryland, 1938; M.S., 1939; PH.D., 1948.

ALVIN E. CORMENY, *Assistant to the President, in Charge of Endowment and Development*

B.A., Illinois College, 1933; LL.B., Cornell University, 1936.

R. LEE HORNBAKE, *Dean of the Faculty*

B.S., State Teachers College, California, Pa., 1934; M.A., Ohio State University, 1936; PH.D., 1942.

FRANK L. BENTZ, JR., *Assistant, President's Office*

B.S., University of Maryland, 1942; PH.D., 1952.

## *Emeritus*

HARRY C. BYRD, *President Emeritus*

B.S., University of Maryland, 1908; LL.D., Washington College, 1936; LL.D., Dickinson College, 1938; D.SC., Western Maryland College, 1938.

## *Administrative Officers of the Schools and Colleges*

MYRON S. AISENBERG, *Dean of the School of Dentistry*

D.D.S., University of Maryland, 1922.

VERNON E. ANDERSON, *Dean of the College of Education*

B.S., University of Minnesota, 1930; M.A., 1936; PH.D., University of Colorado, 1942.

RONALD BAMFORD, *Dean of the Graduate School*

B.S., University of Connecticut, 1924; M.S., University of Vermont, 1926; PH.D., Columbia University, 1931.

GORDON M. CAIRNS, *Dean of Agriculture*

B.S., Cornell University, 1936; M.S., 1938; PH.D., 1940.

RAY W. EHRENSBERGER, *Dean of the University College*

B.A., Wabash College, 1929; M.A., Butler University, 1930; PH.D., Syracuse University, 1937.

NOEL E. FOSS, *Dean of the School of Pharmacy*

PH.C., South Dakota State College, 1929; B.S., 1929; M.S., University of Maryland 1932; PH.D., 1933.

LESTER M. FRALEY, *Dean of the College of Physical Education, Recreation, and Health*

B.A., Randolph-Macon College, 1928; M.A., 1937; PH.D., Peabody College, 1939.

FLORENCE M. GIPE, *Dean of the School of Nursing*  
B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940;  
ED.D., University of Maryland, 1952.

LADISLAUS F. GRAPSKI, *Director of the University Hospital*  
B.N., Mills School of Nursing, Bellevue Hospital, New York, 1938; B.S., University  
of Denver, 1942; M.B.A. in Hospital Administration, University of Chicago, 1943.

IRVIN C. HAUT, *Director, Agricultural Experiment Station and Head, Department  
of Horticulture*

B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; PH.D.,  
University of Maryland, 1933.

ROGER HOWELL, *Dean of the School of Law*

B.A., Johns Hopkins University, 1914; PH.D., 1917; LL.B., University of Maryland,  
1917.

WILBERT J. HUFF, *Director, Engineering Experiment Station*

B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale Uni-  
versity, 1917; D.SC. (HON.), Ohio Northern University, 1927.

SELMA F. LIPPEATT, *Dean of the College of Home Economics*

B.S., Arkansas State Teachers College, 1938; M.S., University of Tennessee, 1945;  
PH.D., Pennsylvania State University, 1953.

FREDERIC T. MAVIS, *Dean of the College of Engineering*

B.S., University of Illinois, 1922; M.S., 1926; C.E., 1932; PH.D., 1935.

PAUL E. NYSTROM, *Director, Agricultural Extension Service*

B.S., University of California, 1928; M.S., University of Maryland, 1931; M.P.A.,  
Harvard University, 1948; D.P.A., 1951.

J. FREEMAN PYLE, *Dean of the College of Business and Public Administration*

PH.B., University of Chicago, 1917; M.A., 1918; PH.D., 1925.

LEON P. SMITH, *Dean of the College of Arts and Sciences*

B.A., Emory University, 1919; M.A., University of Chicago, 1928; PH.D., 1930;  
Diplome le l'Institut de Touraine, 1932.

WILLIAM S. STONE, *Dean of the School of Medicine and Director of Medical  
Education and Research*

B.S., University of Idaho, 1924; M.S., 1925; M.D., University of Louisville, 1929;  
PH.D., (HON.), University of Louisville, 1946.

### *General Administrative Officers*

G. WATSON ALGIRE, *Director of Admissions and Registrations*

B.A., University of Maryland, 1930; M.S., 1931.

THEODORE R. AYLESWORTH, *Professor of Air Science and Head, Department of  
Air Science*

B.S., Mansfield State Teachers College; M.S., University of Pennsylvania.

NORMA J. AZLEIN, *Registrar*

B.A., University of Chicago, 1940.

B. JAMES BORRESON, *Executive Dean for Student Life*  
B.A., University of Minnesota, 1944.

DAVID L. BRIGHAM, *Director of Alumni Relations*  
B.A., University of Maryland, 1938.

C. WILBUR CISSEL, *Director of Finance and Business*  
B.A., University of Maryland, 1932; M.A., 1934; C.F.A., 1939.

WILLIAM W. COBEY, *Director of Athletics*  
A.B., University of Maryland, 1930.

LESTER M. DYKE, *Director of Student Health Service*  
B.S., University of Iowa, 1936; M.D., University of Iowa, 1926.

GEARY F. EPPLEY, *Dean of Men*  
B.S., Maryland State College, 1920; M.S., University of Maryland, 1926.

GEORGE W. FOGG, *Director of Personnel*  
B.A., University of Maryland, 1926; M.A., 1928.

ROBERT J. MCCARTNEY, *Director of University Relations*  
B.A., University of Massachusetts, 1941.

GEORGE W. MORRISON, *Associate Director and Supervising Engineer Physical Plant (Baltimore)*  
B.S., University of Maryland, 1927; E.E., 1931.

HOWARD ROVELSTAD, *Director of Libraries*  
B.A., University of Illinois, 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.

ADELE H. STAMP, *Dean of Women*  
B.A., Tulane University, 1921; M.A., University of Maryland, 1924.

GEORGE O. WEBER, *Director and Supervising Engineer, Department of Physical Plant*  
B.S., University of Maryland, 1933.

### *Division Chairmen*

JOHN E. FABER, JR., *Chairman of the Division of Biological Sciences*  
B.S., University of Maryland, 1926; M.S., 1927; PH.D., 1937.

HAROLD C. HOFFSOMMER, *Chairman of the Division of Social Sciences*  
B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.

WILBERT J. HUFF, *Chairman of the Division of Physical Sciences*  
B.A., Ohio Northern University, 1911; B.A., Yale College, 1914; PH.D., Yale University, 1917; D.SC., (HON.), Ohio Northern University, 1927.

CHARLES E. WHITE, *Chairman of the Lower Division*  
B.S., University of Maryland, 1923; M.S., 1924; PH.D., 1926.

ADOLF E. ZUCKER, *Chairman of the Division of Humanities*  
B.A., University of Illinois, 1912; M.A., 1913; PH.D., University of Pennsylvania, 1917.



## CHAIRMEN, STANDING COMMITTEES, FACULTY SENATE

### GENERAL COMMITTEE ON EDUCATIONAL POLICY

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### COMMITTEE ON ADMISSIONS

Dr. Charles White (Arts and Sciences), *Chairman*

### COMMITTEE ON INSTRUCTIONAL PROCEDURES

Dr. Ronald Bamford (Graduate School), *Chairman*

### COMMITTEE ON SCHEDULING AND REGISTRATION

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### COMMITTEE ON PROGRAMS, CURRICULA AND COURSES

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### COMMITTEE ON PUBLIC FUNCTIONS AND COMMENCEMENTS

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### COMMITTEE ON LIBRARIES

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### COMMITTEE ON UNIVERSITY PUBLICATIONS

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### COMMITTEE ON STUDENT PUBLICATIONS AND COMMUNICATIONS

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### COMMITTEE ON INTERCOLLEGIATE COMPETITION

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### COMMITTEE ON PROFESSIONAL ETHICS, ACADEMIC FREEDOM AND TENURE

Prof. Laurence M. Jones (Law), *Chairman*

### COMMITTEE ON APPOINTMENTS, PROMOTIONS AND SALARIES

Dr. Monroe H. Martin (Arts and Sciences), *Chairman*

### COMMITTEE ON FACULTY LIFE AND WELFARE

Dr. Gladys A. Wiggan (Education), *Chairman*

### COMMITTEE ON MEMBERSHIP AND REPRESENTATION

Dr. William Hahn (Dentistry), *Chairman*

# UNIVERSITY COLLEGE

1959-60

## ADMINISTRATIVE STAFF

College Park, Maryland

RAY EHRENSBERGER, Ph.D., *Dean*

STANLEY J. DRAZEK, Ph.D., *Associate Dean*

RALPH J. KLEIN, Ph.D., *Assistant Dean*

G. ALLEN SAGER, M.S., *Assistant to the Dean*

HELMUT SIEG, Phys., St. Ex., *Assistant to the Dean*

LEO A. KNIGHTS, M.S. in L.S., *Bookmobile Librarian*

## DIVISION OF MILITARY STUDIES

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*Assistant Dean for Military Studies*

JAMES REGAN, JR., Col., U.S. Army (Ret.), *Assistant to the  
Dean for Military Studies*

## DIVISION OF INSTITUTES

College Park, Maryland

RICHARD H. STOTTLER, M.A., *Assistant Dean and Director*

A. JOHN VALOIS, M.A., *Assistant to the Dean*

## BALTIMORE DIVISION

Baltimore, Maryland

EDWARD F. COOPER, M.A., *Director*

JOSEPHINE LEO, B.S., *Assistant Director*

FRANCES C. WICKHAM, M.A., *Adviser in Public Health Nursing*

## ATLANTIC DIVISION

College Park, Maryland

GEORGE J. DILLAVOU, M.A., *Director*

## EUROPEAN DIVISION

Heidelberg, Germany

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ERNEST H. HOFER, B.Litt., (Oxon.), *Associate Director*

DON E. TOTTEN, Ph.D., *Assistant Director, France and Spain*

ROBERT C. LARSON, Ph.D., *Assistant Director, Public Relations*

JOSEPH E. DELLEN, Ph.D., *Assistant Director, United Kingdom*

PAUL DICKSON, Ph.D., Col., U.S. Army (Ret.), *Resident Dean, Munich Branch*

ERNEST HERBSTER, B.A., *Comptroller, European Division*

ANN R. REED, B.A., *Assistant Director of Admissions*

MARGERY O. FRY, B.S., *Evaluator, Admissions*

MONA J. BIAS, M.A., *Assistant Registrar*

KLAUS BURKHARDT, B.S., *Supervisor of Language Courses*

ULRICH A. GRONKE, Dr.Phil., *Assistant Language Supervisor*

ROSE BEYER, Dr.Sc., *Supervisor of Mathematics Courses*

MARY ANN LAKE, M.S., *Administrative Assistant*

JAN HARTMAN, M.A., *Manager, Book Department*

## FAR EAST DIVISION

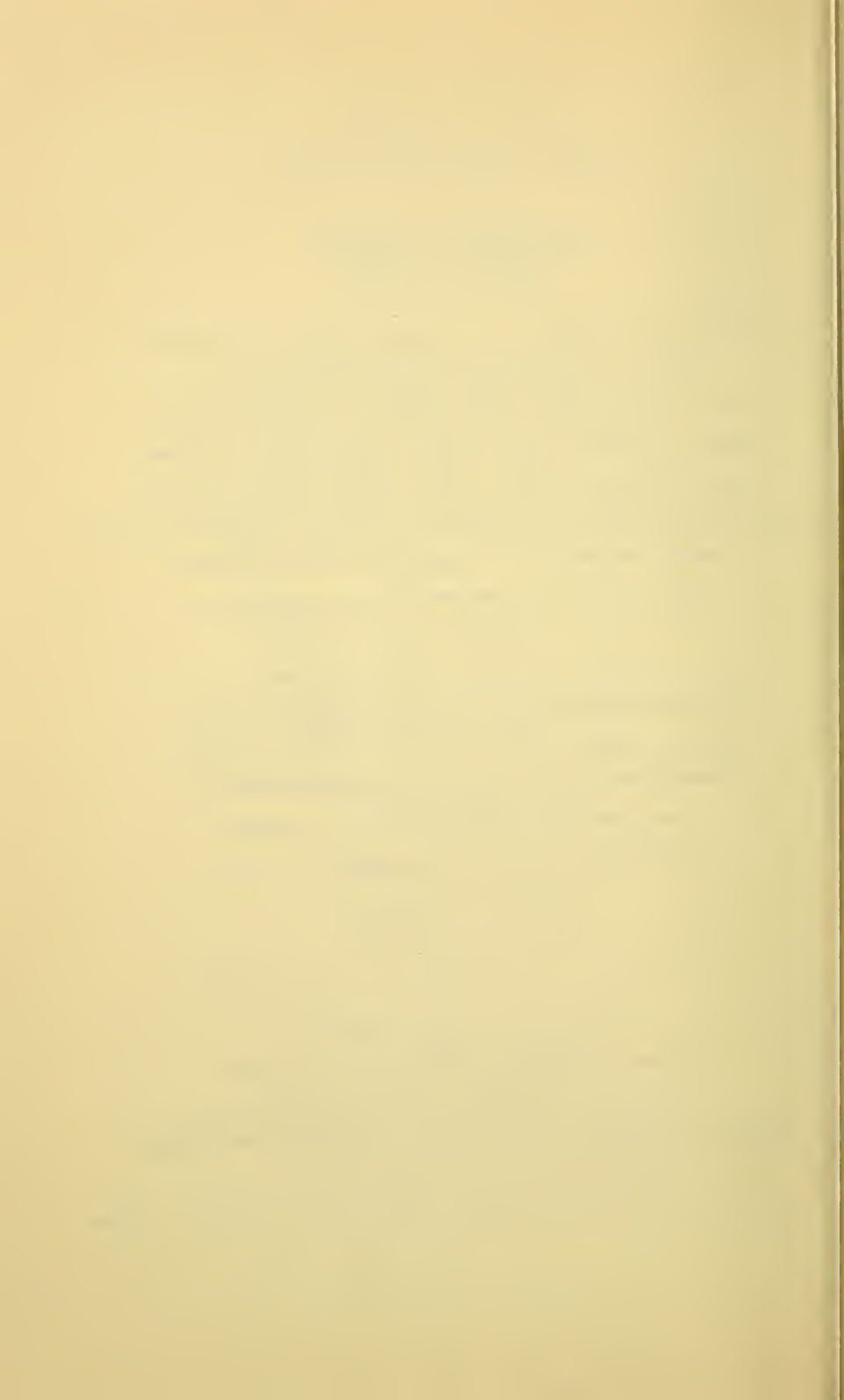
Tokyo, Japan

MASON G. DALY, Ph.D., *Director*

LESLIE R. BUNDGAARD, Ph.D., *Associate Director*

J. VAN CLEVE LOTT, B.S., *Assistant Comptroller*

PEGGY ANN LOTT, B.S., *Assistant Director of Admissions and Registrar*



# SECTION I

## THE COLLEGE

### PURPOSES

THE PRIMARY PURPOSES OF UNIVERSITY COLLEGE ARE: (1) TO EXTEND THE facilities of the University by offering adult educational programs\*\* in the on-campus evening division and conveniently established off-campus centers overseas and throughout the State of Maryland and environs of the District of Columbia; (2) to offer the Bachelor of Arts degree in General Studies and the Bachelor of Science degree in Military Studies to mature adult students; and (3) to arrange conferences, institutes and special programs for interested groups of adults.

### HISTORY

On the recommendation of the Administrative Board and the President of the University, the Board of Regents established in 1947 the College of Special and Continuation Studies. In 1959, action by the Board of Regents resulted in the change of its name to University College.

The scope of activity of this College has been greatly extended since its inception in 1947. The College administers one of the world's largest campuses with operations conducted on four continents. Last year there were in operation more than two hundred different Education Centers in nineteen countries, serving over twenty thousand students. In addition there are over forty conveniently established Centers located throughout the State of Maryland and environs of the District of Columbia, serving more than five thousand adults.

### DEGREE OPPORTUNITIES

University College offers the Bachelor of Arts degree in General Studies and the Bachelor of Science degree in Military Studies.

In cooperation with other colleges of the University, the College administers courses which may be applied to other established undergraduate or graduate degrees. *Students matriculated in other colleges of the University of Maryland on campus may not transfer to the Bachelor of Arts curriculum in General Studies or the Bachelor of Science curriculum in Military Studies and pursue these degrees as full-time on-campus students.*

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\*\*Adult education is here used to include all those forms of training and instruction pursued incidentally during leisure hours by persons otherwise regularly and fully employed.



## *Academic Programs*

Further information regarding degree programs may be found in Section III of this catalog.

**ASSOCIATE IN ARTS OR ASSOCIATE IN SCIENCE.**—Students following an adult program with the University of Maryland who have completed the first two years of an established curriculum may be granted a Certificate of Associate in Arts or Associate in Science whichever is appropriate, providing they have completed 60 semester hours, not including Basic Air Science and physical activities, and that at least 15 semester hours have been completed in residence at the University of Maryland with an average grade of 2.0. The student must make formal application for the certificate to the Office of the Registrar. The certificate must be recommended by the college in charge of the curriculum, as in the case of degrees.

## Academic Programs

University College programs are usually offered on an after-hour basis for mature adult students who are otherwise occupied during the normal daytime hours and who carry only a part-time educational program.

During the 1958-59 school year, the College offered approximately 300 credit courses in the State and the District of Columbia each semester. Over 100 courses were given in the summer term. These figures do not include the European, Atlantic, and Far East Divisions which offer more than 500 courses during each eight-week term. While credit courses comprise the bulk of the offerings, institutes, certificate programs, and in-service training programs are also given.

### ON-CAMPUS EVENING PROGRAM

Starting with the spring semester of 1959, the Board of Regents authorized the establishment of an on-campus evening program of college credit courses for adults. Fifteen courses were offered during the spring semester, primarily lower division courses in the fields of business administration, economics, English, foreign languages, government and politics, history, mathematics, philosophy, psychology, and speech. If future enrollments warrant, program offerings will be expanded with each succeeding semester, and upper level course offerings will be included. The on-campus evening program also includes a wide selection of courses in the field of education which are administered by the College of Education. Students enrolled in the Evening Division must satisfy all campus and academic requirements. For further information about on-campus evening courses, contact the administrative offices of University College in the Skinner Building on the College Park campus.

### ON-CAMPUS "BOOTSTRAP" PROGRAM

Each semester approximately 100 military officers and enlisted men are

assigned by their respective branches of the service to the campus on a temporary duty basis. The purpose of the temporary duty is to enable them to complete college degree requirements through a final semester (or final year in the case of Marines) of full-time study. All tuition and other fees are paid by the student who continues to receive his military pay while attending the University. For further information on the Bootstrap Program, contact your installation education adviser or University College.

#### CREDIT COURSES

The College offers credit courses in the social and natural sciences, military studies, the humanities, mathematics, engineering, education, and other fields. There are limited offerings in the technical areas.

In off-campus centers, such as Baltimore and military establishments, planned sequences of courses are offered. It is not always possible to offer a complete sequence of courses satisfying special curriculums at all centers.

#### CERTIFICATE PROGRAMS

Single courses or sequences of courses leading to a certificate may be set up where university credit is not desired.

#### INSTITUTES AND SHORT COURSES

Adults whose primary interest is that of acquiring additional knowledge and skills in specialized fields should call the Director of Institutes.\*

Institutes, short courses and educational programs specifically designed to meet the particular needs of a group may be arranged. A partial list of these programs follows:

- Adult Education Institute
- Agricultural Meteorology Institute
- Armed Forces Education Conference
- Business Management Institute
- Correctional Administration Institute
- Cosmetology Institute
- Delinquency Control Institute
- Employment Counselors Training Institute
- High School Choral Workshop
- High School Band Workshop
- Highway Maintenance Institute
- Hospital Management Institute
- House-Parents Institute
- Institute on Chinese-American Cultural Relations

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\*Warfield 7-3800, extension 541.

## Statement of Advanced Standing

International Home Economics Congress  
Law Enforcement Institute  
Library Building and Equipment (Pre-conference Institute)  
Maryland Education Conference—PDK  
Maryland Press Institute  
Maryland Traffic Institute  
Maryland State Conference on Welfare  
Maryland Student Library Clubs Convention  
Maryland Workshop on Economic Education  
Motor Fleet Supervisor's Institute  
Nursing Home Administration Institute  
Space Research and Technology Institute  
World Trade Seminar

### IN-SERVICE TRAINING PROGRAMS

A number of in-service training programs involving credit or non-credit courses have been offered in the fields of labor-management, supervisory training, health and welfare, law enforcement, highway engineering, and social service. Interested persons should communicate with the College Park or Baltimore offices of this college.

### SPECIAL PROGRAMS FOR TEACHERS

The staff of the Institute for Child Study of the College of Education offers for teachers a series of courses on human development and on the techniques of child study. The sequence of three courses, Child Development Laboratory I, II, and III, involves the direct year-long study of children as individuals and in groups. It is offered to teachers in the field through this College.

A series of community study courses offered in Baltimore and in several counties supplement the child development work by emphasizing the social environment of the child.

University College, in cooperation with the College of Education, offers courses which fulfill the State Department of Education requirements for certification.

## Statement of Advanced Standing

An official statement of Advanced Standing will be prepared, *upon request*, by the Director of Admissions when the following conditions are fulfilled:

1. Submission of a formal application for admission, including high school record.
2. Submission of official transcripts from all other institutions attended (including official transcripts from military service schools where applicable).

3. Submission of official G.E.D. test reports from USAFI (where applicable).
4. Completion of form D.D. 295 in duplicate (for military personnel).
5. Completion of twelve (12) semester hours of Maryland course work, with a minimum grade average of "C".

An unofficial evaluation will be prepared, *upon request*, as soon as student's file in the office of the Director of Admissions is complete (items 1 through 4 above).

## Establishment of Credit

### CREDIT BY CORRESPONDENCE

In adult programs of education at the University of Maryland, credit for correspondence courses from approved institutions is accepted toward certain degrees at the University of Maryland, providing this credit is accepted by the institution conducting the correspondence course as credit toward its own baccalaureate degrees.

USAFI college level correspondence courses may also be assigned credit by the University to degree seeking students. These will not include USAFI self-study and group-study courses. Credit will be accepted provided the work has been validated by successful completion of the appropriate end-of-course examination. Grades "with distinction" or "satisfactory" must be obtained. USAFI correspondence courses are offered at the freshman and sophomore levels only.

USAFI college level correspondence credit can be evaluated only upon receipt from USAFI, Madison, Wisconsin, of certification of the completion of college level correspondence courses and the official end-of-course examination results with identifying code numbers. *Such documents must come directly from USAFI, Madison. They are not official if sent first to the student or education adviser.*

The following regulations govern acceptance of correspondence work taken either with USAFI or other accredited colleges and universities:

1. A maximum of twelve (12) semester hours of correspondence credit may be accepted by the University of Maryland.
2. Usually no correspondence credit will be accepted as part of the last thirty (30) hours for a degree with the University of Maryland.
3. A student planning to take correspondence course work, either with USAFI or another institution, should first check with the Dean of University College concerning acceptability of the course(s) in the curriculum being pursued. It is the student's responsibility to clear this with his Dean.

## Establishment of Credit

4. The University of Maryland will not accept correspondence credit earned in public speaking and/or foreign languages.

### CREDIT BY EXAMINATION, INCLUDING GED CREDITS\*

Credit towards the Bachelor's degree may be established by examination providing that the individual can exhibit an area of competence. A request to establish credit by examination must be approved by the head of the academic department, the dean of the academic college in which the examination subject is offered, and by the dean of the college in which the student is enrolled. Not all academic departments permit or allow credit by examination. The following conditions govern credit by examination:

- a. The applicant must have completed at the University of Maryland at least 12 semester credits with a minimum average grade of "C" before making the application for an examination to establish credit.

- b. Usually credit by examination will not be accepted for any of the final 30 semester credits.

- c. No more than 20 semester credits can be granted by examination except when a student takes GED credit. Only persons on active military duty are permitted by USAFI authorities to take the GED. Students who establish 24 hours of credit by GED tests are ineligible for further credit by examination. A combination of credit by GED tests and by advanced standing examination may not total more than 24 hours. Non-degree students are ineligible to establish credit by examination. *After September 1, 1959, if a student fails to achieve the minimum score required by the University of Maryland on any part of the college level GED, he may not later establish credit by retaking that part of the test battery. The deficiency must be made up by academic work.*

- d. A foreign student may not establish credit by examination in freshman or sophomore courses of his native language.

- e. The fee for an advanced standing examination is \$5.00 per semester hour of credit.

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\*The following conditions govern credit granted for the completion of the General Education Development examinations:

| TEST | STANDARD SCORES | COURSE EQUIVALENT | CREDITS |
|------|-----------------|-------------------|---------|
| I    | 65              | English 1 & 2     | 3, 3    |
| II   | 60              | Soc. 1, G & P 1   | 3, 3    |
| III  | 61              | General Science   | 6       |
| IV   | 60              | English 3 & 4     | 3, 3    |

No credit will be given for English 3 and 4 until requirements for English 1 and 2 are satisfied. English 8 or 14 will be required of all those who receive 12 hours of English credit by means of the GED examinations.



#### MAXIMUM SERVICE SCHOOL CREDIT

Credit earned by means other than regular class attendance in an approved degree-granting institution excluding Basic and Advanced Air Science and physical activities and credit by examination including credit for General Education Development (GED) tests, cannot be applied toward a degree at the University of Maryland in excess of 24 semester hours. This credit embraces credit for military education (Officers Candidate School), credit which might be transferred from certain service schools recommended by the American Council on Education, and credit earned by correspondence courses from approved institutions. The amount of such credit actually used for a degree at the University of Maryland depends upon the curriculum and college from which adult students elect to graduate.

### Student Responsibility In Planning A Part-Time Program

#### CANDIDATES FOR DEGREES

Students taking credit work in this College will receive their degrees through the degree-granting colleges and the Graduate School. Work to be credited toward an undergraduate or graduate degree should be planned with advisers in colleges granting the degrees. Admission requirements for off-campus degree candidates are the same as for full-time day students at the University. Before registering, a candidate for a degree should be admitted to the University.

Each candidate for a degree must file in the Office of the Registrar, eight weeks prior to the date he expects to graduate, a formal application for a degree.

Students earning their degrees in other colleges must transfer from University College to their degree-granting college when registering for their last six hours.

#### TEACHER CERTIFICATION REQUIREMENTS

A student intending to qualify as a teacher in any city, county, or state should obtain a statement of certification requirements for that particular area and plan a program accordingly.

Maryland State Department of Education requirements provide that a teacher in service may present for certificate credit not more than *six semester hours of credit completed during a school year*.

### Off-Campus Library Service

In cooperation with the University of Maryland Library, University College operates an off-campus library service. Scheduled bookmobile visits are made to off-campus centers, where students may borrow library materials; and in certain distant class centers collections of course-related books are placed under the supervision of the local library or of the course instructor for the convenience of students.

Overseas, course-related books are sent from base to base with the instructors.

## SECTION II

# UNIVERSITY REGULATIONS REGARDING ADMISSION, REGISTRATION, FEES, WITHDRAWALS, AND GRADES

## Admission

### REGULAR ADMISSION

THE ADMISSION REQUIREMENTS FOR PART-TIME STUDENTS WHO DESIRE TO become candidates for degrees are the same as for full-time students at the University. Before registering, a candidate for a degree should be admitted to the University. All students desiring to enroll in any of the degree-granting colleges must apply to the Director of Admissions of the University of Maryland at College Park or Baltimore depending on the location of the office at which they are registering for course work.

In selecting students more emphasis will be placed upon good grades and other indications of probable success in college rather than upon a fixed pattern of subject matter. In general, 4 units of English and 1 unit each of social and natural sciences are required. One unit each of algebra and plane geometry is desirable. While foreign language is desirable for certain programs, no foreign language is required for entrance. Fine arts, trade and vocational subjects are acceptable as electives.

For a more detailed statement of admissions, write the Editor of Publications for a copy of the publication entitled *An Adventure in Learning*.

Those who seek graduate degrees should apply to the Dean of the Graduate School, College Park.

### PROVISIONAL ADMISSION

Students who are not sure that they wish to matriculate for degrees may be admitted to the University on a provisional basis.

### ADMISSION TO GRADUATE SCHOOL

Students who seek graduate school credits must be formally admitted to the Graduate School *prior* to their registration for any University College courses. Applications should be submitted at least two months in advance of the date on which the student wishes to register for a course. Only students who have been officially admitted to the Graduate School will be permitted to register for "200 level" courses.

The student must establish a working relationship, at the beginning of his graduate program, with his academic department head, or duly appointed

adviser, on campus. Prior to each registration, the student should consult with his appointed adviser.

#### TRANSFER OF EVENING DIVISION CAMPUS STUDENTS TO FULL-TIME DAY PROGRAM

An adult student may be admitted provisionally to the Evening Division program. An evaluation is made of his record after he has completed twelve semester hours with the University of Maryland. If the student chooses to transfer to the day program before he successfully completes twelve semester hours with the University, he will be required to meet the admission requirements of a regularly admitted day student. Once the student has been accepted without provision in the Evening Division he may transfer to the day program. If the transfer involves a change in colleges the requirements of the college to which he is transferring must be satisfied.

#### CLASSIFICATION OF STUDENTS

**REGULAR STUDENTS.** Students who prior to their registration for work in University College have been admitted to degree-granting colleges will be considered as students in good standing subject to academic regulations of the University. Students who desire to matriculate for a degree must be high school graduates or must present a high school equivalence certificate.

*Students matriculated in other colleges of the University of Maryland on-campus may not transfer to the Bachelor of Arts curriculum in General Studies or the Bachelor of Science curriculum in Military Studies and pursue these degrees as full-time on-campus students.*

**SPECIAL STUDENTS.** Applicants who are at least twenty-one years of age, and who do not meet the regular entrance requirements, may be admitted to such courses as they seem fitted to take. *Special students are ineligible to matriculate for a degree until entrance requirements have been satisfied.*

Other categories of special students are: (a) those who wish to transfer their University of Maryland credits to another institution, or (b) take University of Maryland courses for self-improvement. These students may pursue any courses for which they have met the prerequisites.

Students who wish to take courses for transfer of credit to other institutions are advised to consult the institution from which they plan to receive their degrees.

#### GUIDANCE

The student who wishes to pursue work toward a degree in a program administered by University College must secure guidance and permission to take off-campus courses from an adviser in the college in which he wishes to obtain his degree.

## Registration

### DEGREES

Credit courses taken under these conditions through University College may be counted toward any of the degrees granted by the colleges of the University.

### QUALITY OF CREDIT COURSES

Both instructors and courses in University College are approved by appropriate department heads and deans and meet the same academic standards as courses and faculty on campus. Courses carry residence credit identical to that given for regular campus courses. Classes meet for sixteen weeks, making a total of 48 class hours for three-credit courses and 32 hours for two-credit courses.

## Registration

### REGISTRATION PERIODS

All students are expected to complete their registration on the day or days designated for each center. This includes the filing of all registration forms and the payment of all bills. Students who fail to register within the prescribed days will be charged a late fee of \$5.00.

### PREREQUISITES

Students taking off-campus courses must have the approval of their advisers in degree-granting colleges to take any course for which the prerequisites have not been fulfilled.

### CHANGE IN REGISTRATION

Once the student has officially registered he cannot substitute one course for another or add one or more courses after the second week of class in a 16-week semester or after the first week of classes in an 8-week term. (See the section on fees.)

The student *cannot* change his course registration from credit to audit after the end of the 5th week of 16-week classes or the end of the 3rd week of 8-week classes.

The student cannot drop one or more courses and continue with one or more courses after the end of the 5th week of 16-week classes or the end of the 3rd week of 8-week classes unless he submits a letter to the Dean, University College, giving legitimate reasons for this action.

### COURSE LOADS

For 16-week courses, the normal load is 6 semester hours. Only exceptional students will be allowed to take more than 6 semester hours and then only with approval of an official *University* adviser.

For courses given in 8-week terms, the normal student load is 3 semester hours. Exceptional students may be allowed to take a heavier load, but only on approval by an official *University* adviser.

On-campus part-time students taking courses through this College are governed by the same rules as apply to off-campus students. Students enrolled in other colleges of the University must obtain permission from their respective dean prior to enrolling in courses offered by this College.

#### DEFINITION OF RESIDENCE

Adult students, enrolling in the full-time day program of the University, are considered to be residents if at the time of their registration they have been domiciled in Maryland for at least one year provided such residence has not been acquired while attending any school or college in Maryland or elsewhere. Time spent on active duty in the armed services while stationed in Maryland will not be considered as satisfying the one year period referred to above except in those cases in which the adult was domiciled in Maryland for at least one year prior to his entrance into the armed services and was not enrolled in any school during that period.

The word domicile as used in this regulation shall mean the permanent place of abode. For the purpose of this rule only one domicile may be maintained.

#### Fees

Matriculation Fee ..... \$10.00

(Payable once at time of first registration by all students full-time and part-time; candidates for degrees and non-candidates. (Only one matriculation fee need be paid for each degree.)

Tuition Charge per Credit Hour..... \$12.00

a. Students enrolled for a full-time campus program must pay \$12.00 per credit hour for courses taken off-campus in addition to regular campus fees.

b. Maximum tuition charge per term for graduate students, \$120.00.

#### LABORATORY FEES PER COURSE

Agricultural Engineering .... \$3.00

Microbiology ....\$10.00 and 20.00

Botany .....\$5.00 and 10.00

Business Administration—  
\$7.50 and 10.00

Statistics ..... 3.50

Chemical Engineering—  
\$8.00 and 10.00

Chemistry .....\$10.00 and 20.00

Education (Depending on  
Laboratory) \$1.00, \$2.00  
\$3.00, 5.00

Practice Teaching..... 30.00

Dairy ..... 3.00

Electrical Engineering..... 4.00

Entomology ..... 3.00



## Fees

|                                            |                        |
|--------------------------------------------|------------------------|
| Home Economics—<br>(Non-Home Ec. Students) |                        |
| Practical Art, Crafts,                     |                        |
| Textiles and Clothing.....                 | 3.00                   |
| Foods and Home Manage-<br>ment (each)—     |                        |
|                                            | \$3.00, 7.00 and 10.00 |
| Horticulture .....                         | 5.00                   |
| Industrial Education—                      |                        |
|                                            | \$5.00 and 7.50        |
| Journalism .....                           | \$3.00 and 6.00        |
| Mechanical Engineering.....                | 3.00                   |
| Music (applied music only)...              | 40.00                  |
| Physical Activities Courses...             | 6.00                   |

|                                             |                  |
|---------------------------------------------|------------------|
| Physics—                                    |                  |
| Lecture Demonstration—                      |                  |
|                                             | \$2.00 and 3.00  |
| Introductory .....                          | 3.00             |
| All other.....                              | 10.00            |
| Psychology .....                            | 4.00             |
| Office Techniques and Man-<br>agement ..... | \$7.50 and 10.00 |
| Speech—                                     |                  |
| Television .....                            | 10.00            |
| Radio and Stagecraft.....                   | 2.00             |
| All other.....                              | \$1.00 and 3.00  |
| Zoology .....                               | 8.00             |

The above laboratory fees will be charged whenever the availability of personnel, facilities, and other factors make it possible to offer laboratory instruction. If equipment other than that belonging to the University of Maryland is used, laboratory fees may not be charged, depending upon the arrangements that can be made with the cooperating party.

## MISCELLANEOUS FEES AND CHARGES

### Late Registration Fee

All students are expected to complete registration, including the filing of class cards and payment of bills, on the regular registration days. Those who do not complete registration during the prescribed days will be charged a fee of..... \$ 5.00

Fee for Change in Registration (Substitution of one course for another, or increase in semester hour registration)\*..... 3.00

Special Examination Fee—to establish college credit—per semester hour 5.00

### Makeup Examination Fee

For students who are absent during any class period when tests or examinations are given..... 1.00

### Transcript of Record Fee

No charge is made for first copy

Each additional copy ..... 1.00

## PROPERTY DAMAGE CHARGE

Students will be charged for damage to property and/or equipment. Where responsibility for the damage can be fixed the individual student will be billed for it; where responsibility cannot be fixed, the cost of repairing the damage or replacing equipment will be pro-rated.

-----  
\*This fee is not charged to part-time students who drop a course and do not substitute in its place another course carrying the same number of credit hours.

|                                                                                                            |     |
|------------------------------------------------------------------------------------------------------------|-----|
| <b>LIBRARY CHARGES.</b> For failure to return books to general library on or before due date—per day ..... | .05 |
| For failure to return books to bookmobile on or before due date—per week .....                             | .25 |
| Satisfactory restitution must be made for lost or mutilated books.                                         |     |

|                                                                                                                                              |         |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>GRADUATION FEES.</b> Graduation Fee for Bachelor's degree .....                                                                           | \$10.00 |
| Graduation Fee for Master's Degree .....                                                                                                     | 10.00   |
| Graduation Fee for Doctor's Degree .....                                                                                                     | 50.00   |
| Foreign Language Examination (first examination without charge) ..                                                                           | 5.00    |
| All fees, except Graduation Fee, are payable at the time of registration for each semester. Graduation Fee must be paid prior to graduation. |         |

#### PAYMENT OF FEES

All checks, money orders, or postal notes should be made payable to the University of Maryland.

#### FEES FOR SHORT COURSES AND INSTITUTES

Fees for short courses and institutes will be determined in terms of cost of each such short course or institute.

#### WITHDRAWAL AND REFUND OF FEES

Any student compelled to leave the University at any time during the academic year must file in person or by letter, *a request for withdrawal*. The Dean of University College will initiate and sign the necessary withdrawal forms and forward them to the Office of the Registrar. If this is not done, the student will not be entitled to a certificate of honorable dismissal, and will forfeit his right to any refund to which he would otherwise be entitled.

Withdrawals must be submitted in order to reach the Dean's office within fifteen days after the student has ceased attending classes. In this case the date of the last class attended will serve as the basis for the refund. If the withdrawal is received after fifteen days, the refund will be computed as of the date the application is received by the Dean's office rather than the date of last class attendance.

Students withdrawing from the University will receive a refund of all charges, less the matriculation and laboratory fees in accordance with the following schedule:

## Fees, Grading System

### PERIOD FROM DATE INSTRUCTION BEGINS—16 WEEK SEMESTER.

|                             |     |
|-----------------------------|-----|
| 2 weeks or less .....       | 80% |
| between 2 and 3 weeks ..... | 60% |
| between 3 and 4 weeks ..... | 40% |
| between 4 and 5 weeks ..... | 20% |
| over 5 weeks .....          | 0   |

### PERIOD FROM DATE INSTRUCTION BEGINS—8-WEEK TERM OR LESS

|                      |     |
|----------------------|-----|
| First week .....     | 60% |
| Second week .....    | 20% |
| Over two weeks ..... | 0   |

When regularly enrolled part-time students for off-campus instruction officially drop a course or courses and continue with one or more courses, they may receive a refund of 80% for the dropped courses if they are officially dropped prior to the third meeting of the class or classes.

## The Grading System

### MARKING SYSTEM

The following grades are used by the University of Maryland; A—Superior Scholarship; B—Good Scholarship; C—Fair Scholarship; D—Passing Scholarship; F—Failure; I—Incomplete; W—Official Withdrawal; X—Ceased to attend a class without an official withdrawal.

**THE GRADE OF "I".** A student may be given the mark of Incomplete if his work in a course has been qualitatively satisfactory and if he can present valid reasons to support his request. In no case will the mark "I" be recorded for a student who has missed more than one fourth of the meetings of the class.

The student *must* consult his instructor, presenting documentation to substantiate his request for an Incomplete. The instructor will make the final decision concerning the granting of the request.

An Incomplete automatically becomes an "F" if it is not removed by the end of the next semester or term in which that subject is again offered (at the same off-campus center). An "I" cannot be removed by the grades "W" or "X."

**THE GRADE OF "X".** A mark of "X" will be used on records of off-campus adult students in those cases where such a student has ceased to attend a class without an official withdrawal provided the student is doing passing work at the time of withdrawal. If he is doing failing work, the grade of "F" will be given. A mark of "X" indicates no record, no prejudice, is terminal, and may not later be changed as in the case of the incomplete mark of "I."

**CHANGE OF GRADE.** With the exception of the grade of "I," all grades are final and *cannot* be changed. If a student wishes to establish credit in a course

in which he has previously received an "F" or "X," he must re-register, pay the full tuition fee, and repeat the entire course. A student may repeat a course only once, except where he has obtained the written permission of the dean and the head of the department in which he took the course and has had such written permission filed in the Registrar's Office.

COMPUTATION OF SCHOLASTIC AVERAGES. In computing scholastic averages, numerical values are assigned to the marks, per semester credit, as follows: A-4, B-3, C-2, D-1, F-0. The grade of "F" is included in any computation of scholastic average, but the grades of "X" and "I" are not.

## SECTION III

### CURRICULA

ANY CURRICULUM OF THE UNIVERSITY MAY BE FOLLOWED BY THE STUDENT enrolled in University College, provided that: (1) adequate laboratory and library facilities are available where necessary, (2) a sufficient number of students desire the program, and (3) qualified and approved faculty are available.

#### Requirements Common to All Curricula

Requirements for all degrees must be met to the satisfaction of the dean of the college concerned.

A minimum of 30 semester hours must be completed in residence for a baccalaureate degree. Credit earned through University College is residence credit.

Normally, the University requires that the *last 30 consecutive hours* be completed in residence. In case of hardship, however, an adult student who has at least a 2.5 grade average may petition to take up to six of the last 30 hours at some other recognized institution. Such petition must be made in writing to the Dean of University College.

An average mark of "C" (2.0) is required for graduation. The "C" average is computed on the basis of the academic courses required by each student's curriculum. The average of transfer students and of those seeking combined degrees is computed only on the courses taken in residence in the University and in satisfaction of the non-professional curricular requirements of the college granting the degree. An over-all average is also computed to include all academic courses taken in the University as a basis for the award of honors and for such other uses as may be deemed appropriate.

Most curricula require 16 semester hours in physical education and air science in the freshman and sophomore years. These requirements are waived for adult, off-campus student. All students should consult the appropriate college catalog for specific degree requirements.

All students are required to complete the University Program in American Civilization which is described in the publication entitled *An Adventure in Learning*. Students who are able to avail themselves of classification tests administered by the University of Maryland may exercise certain options for English 1, 2, Sociology 1, Government and Politics 1, and History 5 and 6, which are a part of the American Civilization program. However, the classification tests do not reduce the 24 semester hours required by the American Civilization Program.

#### UNIVERSITY COLLEGE

TELEPHONE, WASHINGTON, D. C. EXCHANGE

WARFIELD 7-3800, EXTENSION 425, 434, 541

University College offers the Bachelor of Arts degree in General Studies and



the Bachelor of Science degree in Military Studies. These degree programs are designed to meet the educational needs of mature off-campus students and provide optimal latitude in program planning to meet individual needs.

## Bachelor of Arts Degree in General Studies

The Bachelor of Arts degree in General Studies provides opportunity for programs in the area of the social sciences, with concentrations of study in such fields as: economics, history, government and politics, sociology, geography, psychology, commerce, and military studies. In special cases, and with permission of the dean, the student may elect concentrations in other areas.

The Bachelor of Arts degree in General Studies is administered in cooperation with the various academic deans and department heads. *Students matriculated in other colleges of the University of Maryland on campus may not transfer to the Bachelor of Arts curriculum in General Studies and pursue this curriculum as full-time on-campus students.*

| <i>Freshman and Sophomore Years</i>                                               | <i>Credit Hours</i> |
|-----------------------------------------------------------------------------------|---------------------|
| Eng. 1, 2 and 3, 4 or 5, 6 .....                                                  | 12                  |
| Math or Science .....                                                             | 6                   |
| *Foreign Language .....                                                           | 12                  |
| Government and Politics 1 .....                                                   | 3                   |
| Sociology 1, or<br>Psychology 1, or<br>Philosophy 1, or<br>Economics 31           | 3                   |
| History 5, 6 .....                                                                |                     |
| Speech 103, 104 .....                                                             |                     |
| Electives .....                                                                   |                     |
| Total .....                                                                       | 60                  |
| <i>Junior and Senior Years</i>                                                    |                     |
| Primary Concentration from one Department<br>(100 level courses) .....            | 15                  |
| Secondary Concentration from one or more Departments<br>(100 level courses) ..... | 21                  |
| Other Electives .....                                                             | 24                  |
| Total .....                                                                       | 60                  |

## SUMMARY OF DEGREE REGULATIONS

The Bachelor of Arts degree in General Studies requires 120 semester hours of academic work for graduation.

All applicants for this degree must meet the same admission requirements as those applying for other undergraduate degrees at the University of Maryland.

\*Students desiring a primary concentration in commerce may substitute geography 1, 2 or 20, 21, and economics 31, 32, for the language requirement.

## General Studies Curriculum

During the third and fourth year, a student will select primary and secondary areas of concentration. These areas would include the departments of economics, history, government and politics, sociology, geography, psychology, commerce and military studies. In special cases, and with permission of the Dean, the student may elect a primary concentration in other areas.

- a. **PRIMARY AREA**—A student must select 15 hours of 100 level (junior-senior) courses in a single department listed above.
- b. **SECONDARY AREA**—A student must select 21 hours of 100 level courses in one or more of the above listed departments or in departments that are related.
- c. A student must pursue work in related fields. Only a systematic program of courses will be approved. The Dean or the student's adviser will assist the student in mapping a program that involves a coherent concentration of work within a general framework of study.
- d. It is recommended that the 24 hours of elective credit in the junior and senior years include as many 100 level courses as possible.

### CREDIT BY EXAMINATION AND GED CREDIT

College level General Educational Development (GED) credit will be awarded up to 24 semester hours to military personnel only as governed by the University regulations and as explained in Section I of this catalog. Those persons who receive 12 semester hours of credit for English by satisfactorily passing GED tests I and IV will be required to validate this credit by completing English 8 or English 14. This English credit will be applied toward electives.

*After September 1, 1959, if a student fails to achieve the minimum score required by the University of Maryland on any part of the college level GED, he may not later establish credit by re-taking that part of the test battery. The deficiency must be made up by academic work.*

Civilians, who have special competencies, and who are unable to establish credit through the GED examinations, may petition to establish by special examination a maximum of 20 semester hours. Regulations governing these examinations are explained in Section I of this catalog.

### CORRESPONDENCE CREDIT

A maximum of 12 semester hours of correspondence work (including most college level USAFI Correspondence Courses) will be accepted toward this degree from approved institutions, providing this credit is accepted by the institution conducting the correspondence course as credit toward its own baccalaureate degrees. Credit for USAFI Correspondence Courses is awarded only at the freshman and sophomore levels.

### SERVICE SCHOOL CREDIT

Military service school credit will be considered up to 12 semester hours. Basic ROTC, advanced ROTC, Officer Candidate School courses and physical activities credits *will not* be included in the maximum 12 hours allowed for military service credit. Only recognized service school credits will be accepted, and these must be validated by official transcript.

### MAXIMUM COMBINED CREDIT

The maximum combined credit allowed toward this degree for examination credit (including GED credit), correspondence credit and service school credit shall not exceed 36 semester hours.

### GRADUATE STUDY

It must be emphasized that in order to do graduate work, a student must elect enough 100 level courses within a single department to qualify for advanced work. The usual number of credits required for entrance is 24 hours. Sufficient electives are available to enable a student to meet this requirement. Furthermore, the student is advised that the quality of work is of more importance than a specific number of courses.

Students desiring to pursue graduate studies should consult the Graduate School requirements in the area of their choice and plan their program accordingly.

## Bachelor of Science Degree in Military Studies

The Bachelor of Science degree in Military Studies is designed to meet the needs of military personnel. Its purpose is to offer to those interested students a broad education in subjects pertinent to military and public affairs, with emphasis on military studies, government and politics, and history.

As a prerequisite for completion of this curriculum, a student must have satisfactorily held or presently hold a commission in one of the Armed Forces. In unusual circumstances, special permission can be given by the proper dean to civilians to enroll in the program. Other off-campus degree-seeking students should follow the General Studies curriculum (refer to page 17).

# MILITARY STUDIES CURRICULUM

| <i>Freshman Year</i>                                                                 | <i>Credit Hours per Semester</i> |           |
|--------------------------------------------------------------------------------------|----------------------------------|-----------|
|                                                                                      | <i>I</i>                         | <i>II</i> |
| *English 1, 2—Composition and American Literature....                                | 3                                | 3         |
| *Sociology 1—Sociology of American Life or .....                                     | ..                               | 3         |
| Philosophy 1—Philosophy for Modern Man or .....                                      |                                  |           |
| Psychology 1—Introduction to Psychology .....                                        |                                  |           |
| *Government & Politics 1—American Government .....                                   | 3                                | ..        |
| ***Math. 10, 11—Algebra; Trigonometry and Analytic<br>(or Math. 5, 6) Geometry ..... | 3                                | 3         |
| Foreign Language .....                                                               | 3                                | 3         |
| *Science .....                                                                       | 3                                | 3         |
| **Basic Air Science .....                                                            | 2                                | 2         |
| **Physical Activities .....                                                          | 1                                | 1         |
|                                                                                      | 18                               | 18        |

| <i>Sophomore Year</i>                                  | <i>Credit Hours per Semester</i> |           |
|--------------------------------------------------------|----------------------------------|-----------|
|                                                        | <i>I</i>                         | <i>II</i> |
| *English 3, 4—Composition and World Literature or .... | 3                                | 3         |
| *English 5, 6—Composition and English Literature       | 3                                | 3         |
| History 5, 6—History of American Civilization .....    |                                  |           |
| Economics 31, 32—Principles of Economics .....         |                                  |           |
| Speech 103, 104—Speech Composition and Rhetoric ....   | 3                                | 3         |
| Foreign Language .....                                 | 3                                | 3         |
| **Basic Air Science .....                              | 2                                | 2         |
| **Physical Activities .....                            | 1                                | 1         |
|                                                        | 18                               | 18        |

| <i>Junior Year</i>                               | <i>Credit Hours per Semester</i> |           |
|--------------------------------------------------|----------------------------------|-----------|
|                                                  | <i>I</i>                         | <i>II</i> |
| Military Studies 147, 148—Military History ..... | 3                                | 3         |
| Military Studies 151—Military Logistics .....    | 3                                | ..        |
| Military Studies 149—Military Law .....          | ..                               | 3         |
| **Advanced Air Science .....                     | 3                                | 3         |
| Electives .....                                  | 6                                | 6         |
|                                                  | 15                               | 15        |

\*Credit by examination may be permitted for these courses (excepting Philosophy 1 and Psychology 1) upon successful completion of the college level General Education Development Tests. Students who receive 12 credit hours in English by this means are required to complete English 8 or English 14. The credits earned in either of these courses may be used as electives.

\*\*Credit allowed for equivalent service in the Armed Forces. Waived for adult off-campus students.

\*\*\*Mathematics 18 and 19 may be substituted for Mathematics 10, 11 or 5, 6. The excess credits may be placed in lower division electives.

## Military Studies Curriculum

| <i>Senior Year</i>                                                      | <i>Credit Hours per Semester</i> |    |
|-------------------------------------------------------------------------|----------------------------------|----|
| *Military Studies 152—Military Leadership .....                         | ..                               | 3  |
| Military Studies 153—Military Policy of the United States .....         | 3                                | .. |
| Two of the following:                                                   |                                  |    |
| Government and Politics 101—International Political Relations .....     | 3                                | 3  |
| Government and Politics 106—American Foreign Relations .....            |                                  |    |
| Government and Politics 154—Problems of World Politics .....            |                                  |    |
| Government and Politics 197—Comparative Governmental Institutions ..... |                                  |    |
| *Advanced Air Science .....                                             | 3                                | 3  |
| Electives .....                                                         | 6                                | 6  |
|                                                                         | 15                               | 15 |

### ESTABLISHMENT OF CREDIT

Policies on the establishment of credit by examination are explained in Section I and also in connection with the description of the program for the Bachelor of Arts degree in General Studies.

### GRADUATE STUDY

A student wishing to pursue graduate studies upon the completion of the Bachelor of Science degree in Military Studies should plan to use the electives in his curriculum as a major in some one of the departments open to him, such as history, government and politics, sociology and economics. This major must be arranged under the advisement of the head of the department concerned and the Dean of University College.

## COLLEGE OF ARTS AND SCIENCES

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WARFIELD 7-3800, EXTENSION 287

Degrees in the College of Arts and Sciences are based primarily upon major and minor concentrations rather than upon curricula. The student must meet the conditions set for both major and minor (or required supporting courses) by the department in charge of his major work. These requirements vary from one department to another. In general they include a full year's work in the major subject (30 to 40 semester hours) and a half year's work in the minor or in supporting courses (18 semester hours). The major department has authority over

\*Credit allowed to those who are serving or have served as commissioned or warrant officers in the Armed Forces.



both the major and the minor. A general college requirement is that the student must have a "C" average in his major and a "C" average in his major and minor combined unless the major department sets a higher requirement.

Major work uniformly must be done in one department, as in history, sociology, or government and politics. Minor work need not be restricted to one department, provided the head of the major department approves of the individual courses taken. For example, a history major may take, as a part of his 18 semester hours of minor work, courses in such subjects as sociology, government and politics, psychology, and economics. The minor, however, must consist of a coherent group of courses, and the head of the major department must approve such a divided minor. Of the 18 semester hours required in the minor, at least six must be in one department in courses numbered 100 or above. The safest procedure, for the adult off-campus student, who is denied the privilege of registering each semester with the direct approval of the head of his major department, is to concentrate his minor work in one department. Thus, the major in history may take his 18 semester hours of minor work in sociology, or government and politics, or other comparable departments.

In accordance with University regulations, a student must acquire a minimum of 56 semester hours of academic work with an average grade of "C" or better before he will be permitted to take courses numbered 100 or above in his major or minor. A student who has established a "B" average in work done at this University may take courses numbered 100 or above after the completion of 48 semester hours of academic work. The student should be careful to avoid taking courses for which he does not have the prescribed prerequisites.

Before a student selects a major or minor, he should consult the head of the major department at College Park. It is this person alone, or his designated representative, who can give the candidate for the Arts and Sciences degree approval on major and minor requirements. Department heads are willing to answer by mail or telephone any inquiries from adult off-campus students majoring with their departments.

Majors offered in the College of Arts and Sciences are as follows:

- |                             |                  |
|-----------------------------|------------------|
| 1. American Civilization    | 12. History      |
| 2. Art                      | 13. Mathematics  |
| 3. Botany                   | 14. Microbiology |
| 4. Chemistry                | 15. Music        |
| 5. Classical Languages      | 16. Philosophy   |
| 6. Comparative Literature   | 17. Physics      |
| 7. Economics                | 18. Psychology   |
| 8. English                  | 19. Sociology    |
| 9. Foreign Languages        | 20. Speech       |
| 10. Geography               | 21. Zoology      |
| 11. Government and Politics |                  |

Two considerations must be emphasized in connection with this listing of majors. In the first place, many science courses cannot be given at off-campus centers where laboratory facilities are not available. And, in the second place, courses in specialized subjects cannot be offered at a given center if there is not a sufficiently large body of students to support them. For this latter reason, especially, it is not always practicable for a student to complete all degree requirements in specialized subjects off-campus. The Arts and Sciences majors which have been shown by experience to be most nearly attainable at off-campus centers are history, government and politics, and sociology.

It must be noted that no course generally required in the University may be counted toward a major or minor in the College of Arts and Sciences. Thus, the courses Government and Politics 1, Sociology 1, History 5 and 6, and the first two years of English may not be counted toward majors and minors. The twelve semester hours required in a foreign language and the twelve semester hours required in mathematics or science may not be counted toward the major or minor.

#### COLLEGE REQUIREMENTS

1. **FOREIGN LANGUAGE.** Twelve semester hours in one language, unless otherwise specified.

2. **NATURAL SCIENCE AND MATHEMATICS.** Twelve semester hours, unless otherwise specified. The science courses elected require the approval of the dean; they will usually be from those departments offering majors in the College of Arts and Sciences. At least one course must include laboratory experience and one course must be elected in each of the divisions of Biological and Physical Sciences except in the case of students whose science courses are specifically prescribed in their curricula.

3. **SPEECH.** Two or three semester hours in accordance with the particular curriculum.

4. **MAJOR AND MINOR REQUIREMENTS.** When a student has completed satisfactorily the requirements of the freshman and sophomore years he will select a major in one of the departments of an upper division and for graduation will complete a departmental major and a minor. The courses constituting the major and the minor must conform to the requirements of the department in which the major work is done.

The student must have an average of not less than "C" in the introductory courses in the field in which he intends to major.

A major shall consist, in addition to the underclass departmental requirements, of 24-40 hours, of which at least twelve must be in courses numbered 100 or above.

A minor, in programs leading to the A.B. degree, shall consist of a coherent group of courses totalling 18 semester hours in addition to the requirements

listed above. At least six of the 18 hours must be in a single department in courses numbered 100 or above. The courses comprising the minor must be chosen with the approval of the major department.

No minor is required in programs leading to the B.S. degree, but the student must take such supporting courses in science or other fields as are required by his major department.

The average grade of the work taken in the major field must be at least "C"; some departments will count toward satisfaction of the major requirement no course completed with a grade of less than "C." The average grade of the work taken in the major and minor fields combined must be at least "C." A general average of "C" in courses taken at the University of Maryland is required for graduation.

### HISTORY MAJOR

1. Every major in history is required to complete a minimum of 24 semester hours in advanced courses (courses numbered 100 or above), with the following exceptions: (a) the total may be reduced by 3 credit hours for those students who, in addition to the prerequisites, have taken 6 credits in other history courses under the 100 level; and (b) the total may be reduced by 6 credit hours for those who, in addition to the prerequisites, have completed 12 semester hours in history courses under the 100 level.

2. No less than 15 nor more than 18 semester hours of the 24 in advanced courses should be taken in any one field of history, *e. g.*, European, American, or Latin American.

3. Prerequisites for majors in history are History 5 and 6 (required of all students) and History 1 and 2.

4. All majors are required to take the proseminar (History 199) during their senior year. History 199, the proseminar, may be waived in hardship cases where the off-campus student cannot come to the campus or is unable to take this course at his off-campus center.

5. No grades of "D" in the major field will be counted toward completing the major requirements. An average grade of "C" must be maintained in the courses selected for a minor.

### SOCIOLOGY MAJOR

1. Every major in sociology is required to take 27 hours in sociology exclusive of Sociology 1.

2. Required courses for sociology majors are the following:

Sociology 2, Principles of Sociology  
Sociology 183, Social Statistics  
Sociology 186, Sociological Theory  
Sociology 196, Senior Seminar

Sociology 196, the Senior Seminar, may be waived in hardship cases, where the off-campus student cannot come to the campus or is unable to take the course at his off-campus center.

3. No grades of "D" in the major field will be counted toward completing the major requirements.

#### GOVERNMENT AND POLITICS MAJOR

In addition to the regular University requirements, a student majoring in the field of government and politics must meet the following conditions:

1. Government and Politics 1, American Government, or its equivalent, is prerequisite to all the other courses offered by the Department. All persons majoring in government and politics must first complete this course with a grade of "C" or better.

2. All majors must take 33 hours of government and politics, exclusive of Government and Politics 1.

3. No grades of "D" in the major field will be counted toward completing the major requirements.

4. A student's program must include at least one course in each of five of the six following fields: (1) foreign and international, (2) local government, (3) public administration, (4) public law, (5) public policy and (6) political theory. Information as to the classification of Government and Politics courses in the fields may be obtained by application to a major adviser.

#### AMERICAN CIVILIZATION MAJOR

The program in American Civilization embraces a combined major-minor plan. The Committee in charge of the program consists of the heads of the departments of English, history, government and politics, and sociology. Members of the committee serve as official advisers to students electing to work in the field. The principal objectives of the work for majors are cultural rather than professional.

In choosing a curriculum, students are required to concentrate in one of the four departments primarily concerned with the program. A student following this curriculum must elect at least 18 hours of work at the 100 level in at least two of the departments represented in this program. Elective courses are, with the aid of an official adviser, chosen from courses offered in the humanities, in the social sciences, or in education. Normally, most elective courses are in history, English, foreign languages, comparative literature, economics, sociology, government and politics, and philosophy; but it is possible for a student to fulfill the requirements of the program and to elect as many as thirty semester hours in such subjects as art and psychology, provided that such work fits into a carefully planned program.



In his senior year, each major is required to take a conference course of six semester hours in which the study of American civilization is brought to a focus. During this course, the student analyzes eight or ten important books which reveal fundamental patterns in American life and thought and receive incidental training in bibliographical matters, in formulating problems for special investigation, and in group discussion.

**EMPHASIS HISTORY.** A student following this curriculum must elect at least 18 hours of work at the 100 level in at least two of the four departments represented in the program.

This curriculum is in some ways ideal for the off-campus student, in that it enables the student to move toward a degree with a minimum of semester hours in one department. There are, however, two principal obstacles to its usefulness to the off-campus student. First, not all courses offered by the departments mentioned above are applicable to this program. For example the departmental adviser might not approve a course in medieval history for this program. A planned program for the individual student necessitates full agreement with advisers in one of the four departments directing the program. It is necessary for the student to understand fully what courses will fit into his program. Secondly, it may prove difficult, at a given center, to arrange for the conference course of six semester hours required in the senior year. If, however, a large enough group of students desire the course at a given time it can be arranged.

Students interested in this program should consult with the Executive Secretary of the American Civilization Curriculum, Professor Carl Bode, Department of English, University of Maryland, College Park, Maryland.

### **PHILOSOPHY**

The department's undergraduate courses are designed to help student attain philosophical perspective, clear understanding, and sound critical evaluation concerning the nature of man, his place in the universe, and the significance of the principal types of human experiences and activities. Student planning to major in philosophy should consult the chairman of the department about preparation for the major.

### **OTHER MAJORS**

Other majors in the College of Arts and Sciences are available as mentioned above. None of them are closed to adult off-campus students except in practical terms of (1) the difficulties in offering laboratory courses, and (2) an adequate number of students to support them at a given center during a given term. The work in history, government and politics, and sociology are emphasized above only because experience with off-campus offerings has shown them to be most nearly feasible as off-campus majors.



# COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION

TELEPHONE, WASHINGTON, D. C. EXCHANGE:

WARFIELD 7-3800, EXTENSION 346

The College of Business and Public Administration is fully accredited by the American Association of Collegiate Schools of Business. The College comprises seven departments:

- I. Department of Business Organization and Administration
  1. Accounting and Statistics
  2. Financial Administration
  3. Industrial Administration
  4. Insurance and Real Estate
  5. Marketing Administration
    - (a) Advertising
    - (b) Foreign Trade and International Finance
    - (c) Retail Store Management
    - (d) Sales Management
  6. Personnel Administration
  7. Transportation Administration
    - (a) Airline and Airport Management
    - (b) Traffic Management
  8. Public Administration
- II. Department of Economics
- III. Department of Foreign Service and International Relations
- IV. Department of Geography
- V. Department of Government and Politics
- VI. Department of Journalism and Public Relations
- VII. Department of Office Techniques and Management
  1. Office Management
  2. Office Techniques

For the details of curricula, the student should consult the catalog of the College of Business and Public Administration. Most important, in addition to the regular university requirements, are the following:

1. Most curricula require the following courses:
  - Business Administration 10 and 11. Organization and Control
  - Business Administration 20 and 21. Principles of Accounting
  - Economics 4 and 5. Economic Developments
  - Economics 31 and 32. Principles of Economics
  - Geography 1 and 2. Economic Resources
  - Government and Politics 1. American Government
  - Mathematics 5. General Mathematics
  - Mathematics 6. Mathematics of Finance

2. A student must acquire a minimum of 56 semester hours of academic work with an average grade of "C" or better before he will be permitted to take courses numbered 100 or above. A student who has established a "T" average in work done at this University may take courses numbered 100 or above after the completion of 48 semester hours of academic work, providing he has the necessary prerequisites.

3. The curricula in Business Administration are specialized, as the above list indicates. As in the cases of some other curricula and Arts and Science majors it is not always possible to complete these curricula at off-campus centers operated by the University College. Any course in any curriculum may be given, however, if an adequate number of students desire it at a given time and center.

## COLLEGE OF EDUCATION

TELEPHONE, WASHINGTON, D. C. EXCHANGE:

WARFIELD 7-3800, EXTENSION 234

The College of Education offers curricula for students of Education and for teachers in service. Undergraduate education curricula and advisers are as follows:

1. Academic Education
  - English—Marie D. Bryan
  - Foreign Languages Fern D. Schneider
  - Mathematics—John R. Mayor, M. L. Keedy, H. L. Garstens
  - Natural Sciences—Orval L. Ulry
  - Social Sciences—Robert G. Risinger, Jean D. Grambs
  - Speech—Warren L. Strausbaugh
2. Agricultural Education (under the College of Agriculture)—H. Palm  
Hopkins
3. Art Education—Vienna Curtiss, E. L. Longley, Jr.
4. Business Education—Arthur S. Patrick
5. Elementary Education—Alvin W. Schindler, Marie Denecke, Glen C.  
Blough, Leo W. O'Neill, Wesley J. Matson
6. Home Economics Education—Mabel Spencer
7. Industrial Education—Donald Maley, Paul E. Harrison, Eckhard Jacob  
sen, George R. Merrill, William F. Tierney, Edmund Crosby, Ca  
Schramm
8. Music Education—Herbert Henke
9. Nursery School—Kindergarten Education—James L. Hymes, Jr., Margar  
A. Stant
10. Physical Education—(Men)—Albert W. Woods
11. Physical Education—(Women)—Dorothy Mohr

Areas in which graduate work is offered include adult education, business education, educational administration and supervision, curriculum and teaching, elementary education, guidance, higher education, history, philosophy, and comparative education, home economics education, human development, industrial arts, music education, secondary education, and vocational-industrial education.

Specific curriculum requirements may be obtained from the College of Education catalog or the Graduate School catalog.

Only a few of the curricula are described below. The College of Education and Graduate School catalogs should be consulted for full descriptions and requirements of all curricula listed above.

#### OFF-CAMPUS COURSES IN EDUCATION

University College offers courses in education for in-service teachers to permit them to complete a part of the work required for a bachelor's degree, to enable graduate students to work toward advanced degrees, and to fulfill or renew the Maryland State Department of Education certification requirements. Education courses are offered most frequently at the Baltimore Center and at various other centers established in cooperation with the counties of Maryland.

#### ELEMENTARY EDUCATION FOR UNDERGRADUATE TEACHERS

This curriculum is for teachers who have completed a two- or three-year curriculum in a teachers college. It is also for teachers who have two or more years of successful teaching experience which can be used in lieu of student teaching to meet certification requirements.

This curriculum, leading to the Bachelor of Science degree in elementary education, requires a total of 128 semester credits. The last 30 credits earned before the conferring of the degree must be taken with the University of Maryland.

#### INDUSTRIAL EDUCATION

Three curricula are administered by the Industrial Education Department: (1) Industrial Arts Education, (2) Vocational-Industrial Education, and (3) Education for Industry.

The Industrial Arts Education curriculum prepares people to teach industrial arts at the secondary level. It is a four-year professional program leading to a Bachelor of Science degree.

The Vocational-Industrial curriculum may lead either to certification as a vocational-industrial teacher, with no degree involved, or to a Bachelor of Science degree including certification. The University of Maryland is designated as the institution which shall offer the "Trade and Industrial" certification courses

and hence the courses which are offered are those required for certification in Maryland. The Vocational-Industrial curriculum requires trade competence as specified by the *Maryland State Plan for Vocational Education*. A person who aspires to take the certification courses should review the State plan and he may well contact Maryland State Department of Education officials. If the person has in mind teaching in a designated city or county, he should discuss his plans with the vocational-industrial official of that city or county inasmuch as there are variations in employment and training procedures.

The Education for Industry curriculum is a four-year program leading to a Bachelor of Science degree. The purpose of the program is to prepare persons for jobs within industry and, as such, it embraces four major areas of competence, (a) technical competence, (b) human relations and leadership competence, (c) communications competence, and (d) social and civic competence. The student who is enrolled in this curriculum is required to obtain work in industry in accordance with the plan described in the course, Industrial Education 124, a.b. Consult course descriptions in the back section of this catalog.

## GRADUATE SCHOOL

TELEPHONE, WASHINGTON, D. C. EXCHANGE:

WARFIELD 7-3800, EXTENSION 232

Master's and doctor's degrees are given by most of the departments at the University. Graduate programs are administered by the Graduate School in cooperation with the various departments. Students are admitted to the Graduate School only if (1) they hold baccalaureate degrees and (2) their previous work is in quality and extent acceptable to the department in which they desire to work. A "B" average is required.

*A student pursuing a graduate program should keep constantly in touch with the graduate adviser of his major department.*

It is sometimes difficult to proceed toward graduate degrees at off-campus centers conducted by University College. Library and laboratory facilities are not always available at off-campus centers. Many of the departments require that a certain number of courses be completed on the campus. Furthermore, graduate work is highly specialized, and the number of students desiring particular courses at a given time and center is seldom large. If the circumstances are favorable, however, graduate work in some fields can be offered off-campus.

Courses may be taken for graduate work only if the student has been admitted to the Graduate School.

Graduate degrees are awarded at the completion of an individually planned course study. The student must register for each course in full consultation with the departmental adviser concerned. In general, the master's degree is based upon a division of work between a major and a minor. A minimum of

half the required courses for this degree must be taken in courses numbered 200 or above. These courses are open only to graduate students. The remaining courses required for the degree may be taken in courses numbered between 100 to 199. These courses are open to juniors and seniors as well as to graduate students. Courses taken for undergraduate credit may not be counted toward graduate degrees. Information regarding the requirements for all advanced degrees may best be obtained from the Graduate School catalog and by consultation with the head of the department concerned.

University College arranges extensive graduate course programs at several centers. The programs in the various counties and at Baltimore frequently include graduate courses in Education. Graduate courses in mathematics and the sciences are offered at the Aberdeen Proving Ground, Bureau of Ships, David Taylor Model Basin, National Bureau of Standards, Naval Ordnance Laboratory, Naval Research Laboratory, Patuxent (Naval Air Test Center), and the Pentagon.

Occasionally graduate courses in the social sciences, particularly history, government and politics, and sociology, are offered at other centers.

## SCHOOL OF NURSING

TELEPHONE, BALTIMORE, MARYLAND EXCHANGE:

PLAZA 2-1100, EXTENSION 292

OR LEXINGTON 9-0320, EXTENSION 752

The specific objectives of this program are to bring up to full collegiate level the basic nursing preparation of graduates of three year diploma schools, and to supply the non-professional courses considered desirable as a basis for further cultural and professional education.

Registered nurses who have completed a three year program in an approved school of nursing, and who have successfully passed the Maryland State Board Examination for Registration of Nurses, or the equivalent, and have qualified as registered nurses, and meet the admission requirements of the University of Maryland may pursue studies in the School of Nursing leading to the degree of Bachelor of Science in Nursing.

### ADVANCED STANDING CREDIT

Advanced standing involving a maximum of 45 credits is determined by the applicant's Nursing School record and the results of the Registered Nurse Qualifying Examination of the National League for Nursing. Students who fail to meet the required percentile score in any clinical area will be required to take additional work.



# Nursing Curriculum

## REQUIREMENTS

### General Requirements

|                                                  | Credit Hours per Semester |
|--------------------------------------------------|---------------------------|
| Eng. 1—Composition and American Literature.....  | 3                         |
| Eng. 2—Composition and American Literature ..... | 3                         |
| Eng. 3—Composition and World Literature .....    | 3                         |
| Eng. 4—Composition and World Literature .....    | 3                         |
| or                                               |                           |
| Eng. 5—Composition and English Literature .....  | 3                         |
| Eng. 6—Composition and English Literature .....  | 3                         |
| G. & P. 1—American Government .....              | 3                         |
| Soc. 1—Sociology of American Life .....          | 3                         |
| H. 5—History of American Civilization .....      | 3                         |
| H. 6—History of American Civilization .....      | 3                         |

### Science Requirements

|                                           | Credit Hours per Semester |
|-------------------------------------------|---------------------------|
| Microb. 1—Microbiology .....              | 3 or 4                    |
| Microb. 101—Pathogenic Microbiology ..... | 3 or 4                    |
| Chem. 1—General Chemistry .....           | 4                         |
| Chem. 3—General Chemistry .....           | 4                         |
| or                                        |                           |
| Chem. 11—General Chemistry .....          | 3                         |
| Chem. 13—General Chemistry .....          | 3                         |

### Nursing Requirements

|                                                            | Credit Hours per Semester |
|------------------------------------------------------------|---------------------------|
| Nurs. 9—Nursing in Child Health .....                      | 2                         |
| Nurs. 108—Applied Psychology .....                         | 2                         |
| Nurs. 153—Public Health .....                              | 2                         |
| Nurs. 154—Principles of Management in a Nursing Unit ..... | 2                         |
| Nurs. 156—Public Health Nursing I .....                    | 2                         |
| Nurs. 157—Public Health Nursing II .....                   | 4                         |
| Nurs. 158—Biostatistics .....                              | 3                         |
| Nurs. 199—Pro-Seminar .....                                | 2                         |
| Nurs. 159—Clinical Practicum .....                         | 2                         |

### Additional Requirements

|                                               | Credit Hours per Semester |
|-----------------------------------------------|---------------------------|
| Hea. 120—Teaching Health .....                | 3                         |
| Psych. 1—Introduction to Psychology .....     | 3                         |
| Sp. 1—Public Speaking } .....                 | 2                         |
| Sp. 10—Group Discussion } .....               | 2                         |
| or                                            |                           |
| Sp. 103—Speech Composition and Rhetoric ..... | 3                         |
| Ed. 90—Development and Learning .....         | 3                         |
| P.E. 160—Theory of Exercise .....             | 3                         |
| Nut. 114—Nutrition for Health Services .....  | 3                         |
| Soc. 64—Courtship and Marriage .....          | 3                         |

## ELECTIVES

Electives may be selected after consultation with the adviser in the areas of psychology, education, and nursing.

A total of 128 semester credits are necessary for the degree, the last 30 semester hours of which must be taken in the University of Maryland.

# COLLEGE OF PHYSICAL EDUCATION, RECREATION, AND HEALTH

TELEPHONE, WASHINGTON, D. C. EXCHANGE:

WARFIELD 7-3800, EXTENSION 252

This College provides professional preparation leading to the Bachelor's degree in the following general areas: physical education, recreation, health and safety education, and physical therapy. Moreover, in conjunction with the Graduate School and the College of Education, graduate programs leading to both master's and doctor's degrees are available in physical education, recreation and health. A research laboratory is maintained for faculty members and selected graduate students who are interested in investigating the effects of exercise and various physical education activities upon the body.

The degree of Bachelor of Science is conferred upon students who have met the conditions of their curricula as herein prescribed by the College of Physical Education, Recreation, and Health, and have completed 120 academic hours, not including air science and/or physical activities. Candidates enrolled in the College of Education with a major in Physical Education or Health Education receive a Bachelor of Science degree upon fulfillment of the requirements as prescribed by that College.



## SECTION IV

### CENTERS

UNIVERSITY COLLEGE PROVIDES EDUCATIONAL PROGRAMS IN THE COUNTIES of the State, in Baltimore, in various Air Force, Army, Navy and other governmental agencies, and in industrial establishments.

Classes are offered at centers ranging from Oakland, approximately 160 miles west of College Park, to Worcester County which borders on the Atlantic Ocean. Centers also range from counties bordering on Pennsylvania to Patuxent in Southern Maryland.

#### Establishment of Off-Campus Centers

The College is prepared to establish credit courses, institutes, and special programs for groups of adults who are qualified to do university work. If facilities permit and demand is sufficient, courses or institutes may be set up in any community requesting this service.

The ability of University College to meet all requests for off-campus courses is limited by three factors: (1) The College prefers to use regular University staff members to teach its courses. Occasionally, staff members are not free for off-campus assignments. (2) Courses can be given only where there are adequate reference library materials, laboratories or other necessary facilities. (3) Another limiting factor is student enrollment. Occasionally a course which has been scheduled must be cancelled if there is insufficient enrollment.

#### Stateside Centers

During the 1958-59 school year, programs were offered at the fifty-three stateside centers listed below:

|                          |                          |
|--------------------------|--------------------------|
| *Aberdeen Proving Ground | Chestertown              |
| Accokeek                 | Cumberland               |
| Andrews Air Force Base   | David Taylor Model Basin |
| *Annapolis               | Denton                   |
| *Army Chemical Center    | District Heights         |
| *Baltimore               | *Dundalk                 |
| *Bel Air                 | Easton                   |
| Bolling Air Force Base   | *Ellicott City           |
| Bureau of Ships          | *Fort Holabird           |
| Campus (College Park)    | Fort Meade               |
| Cambridge                | Fort Ritchie             |
| Centreville              | Frederick                |

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\*Courses at these centers are administered through the Baltimore office, Lombard and Greene Streets, Baltimore 1, Maryland.

|                                |                           |
|--------------------------------|---------------------------|
| Gaithersburg                   | Prince Frederick          |
| *Glen Burnie                   | Princess Anne             |
| Hagerstown                     | *Reisterstown             |
| Hughesville                    | Rockville                 |
| La Plata                       | Rollingwood               |
| *Maryland Penitentiary         | Salisbury                 |
| Marley                         | Silver Spring             |
| Metropolitan Police            | Snow Hill                 |
| National Bureau of Standards   | Suitland                  |
| Naval Ordnance Laboratory      | *Towson                   |
| Naval Research Laboratory      | Viers Mill                |
| Oakland                        | Walter Reed Army Hospital |
| Park Lawn                      | *Westinghouse             |
| Patuxent Naval Air Test Center | Woodlin                   |
| Pentagon                       |                           |

A schedule of courses for each of the centers described is available approximately six weeks prior to the beginning of each semester.

#### HUMAN DEVELOPMENT EDUCATION

Human Development laboratory courses are offered in many states throughout the country. These courses are given by the Institute for Child Study and registrations are administered by University College.

During the past several years, students in the following states enrolled in this program for credit:

|                      |           |                |
|----------------------|-----------|----------------|
| Alabama              | Georgia   | New Jersey     |
| Arkansas             | Idaho     | Ohio           |
| California           | Kentucky  | Pennsylvania   |
| District of Columbia | Louisiana | South Carolina |
| Florida              | Maryland  | Virginia       |

#### COUNTY PROGRAMS FOR TEACHERS

University College offers courses for teachers in nearly every county in Maryland. The specific courses and their locations depend on the requests made by County Superintendents of Education, their supervisors and assistants, and teachers. The actual courses presented will depend on local interest and support of specific courses. Experience has shown that at least three months are required to arrange courses at off-campus centers. The courses are normally scheduled concurrently with campus courses. See Section I for further details. For information concerning registration, contact University College or the County Superintendent of Education.

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\*Courses at these centers are administered through the Baltimore office, Lombard and Greene Streets, Baltimore 1, Maryland.



In cooperation with County Superintendents, University College and the College of Education have developed three-year cycles of course offerings in certain areas of the State. Such long range scheduling permits everyone concerned to plan programs more intelligently. At the invitation of County Superintendents, similar cycles will be developed in other areas of the State.

Courses have been offered in the counties indicated below:

Allegany—Cumberland  
Anne Arundel—Annapolis  
Baltimore—Dundalk, Reisterstown  
Calvert—Prince Frederick  
Caroline—Denton  
Charles—Hughesville  
Dorchester—Cambridge  
Frederick—Frederick  
Garrett—Grantsville  
Harford—Aberdeen, Bel Air  
Howard—Ellicott City  
Kent—Chestertown  
Montgomery—Bethesda, Chevy Chase, Gaithersburg, Rockville, Silver Spring, Wheaton  
Prince Georges—Accokeek, College Park, District Heights, Landover Hills, Langley Park, Suitland  
Queen Anne—Centreville  
Somerset—Princess Anne  
St. Mary's—Leonardtown  
Talbot—Easton  
Washington—Hagerstown  
Wicomico—Salisbury  
Worcester—Snow Hill

Teachers interested in having a program in Education started in their county or community should make their requests known to this college through their county Superintendent of Schools or some other school official.

#### CHILD STUDY

The staff of the Institute for Child Study, College of Education, offers in each county a series of courses on human development and on the techniques of child study for members of the educational profession. The sequences of three courses called Child Development Laboratory I, II, and III involve the direct year-long study of children as individuals and in groups and are offered to teachers in the field. Teachers should contact their county Superintendent of Schools for offerings in their community. Graduate courses in human development are also available in a few of the counties.

#### COMMUNITY STUDY

During the past year three separate courses in community study Ed. 163,

164, 165 were offered in Baltimore. These courses dealt with the study of local community problems and their influence upon the child, the school, and the home.

The complexity of this program prohibits its being offered in a number of centers. Teachers interested in this program should direct their inquiries to the Dean of this college.

## ABERDEEN PROVING GROUND

Courses offered at the Aberdeen Proving Ground are planned to meet the educational needs of military and civilian personnel of the Aberdeen-Edgewood area. During the past year, courses in business administration, economics, English, history, languages, government and politics, mathematics, military studies, psychology and speech were offered. A regular sequence of courses is arranged to permit Army personnel to pursue degrees in Military Studies.

The Army Education Office at the Proving Ground assists the University in planning this program.

Civilians may enroll if they can secure special passes from the military post concerned.

Further information regarding this program may be obtained from Mr. George Baker, Jr., Education Officer and Adviser, telephone: Aberdeen 1000, Extension 27185, or the Baltimore Office of UC, PLaza 2-1100, Extension 292, 293.

## ANDREWS AIR FORCE BASE

During the 1951 spring semester an educational program was initiated at Andrews Air Force Base. The education office at Andrews, with the cooperation of this College, plans the program for Andrews several months in advance of each semester.

The past semester's offerings included courses in business administration, economics, English, foreign languages, government and politics, history, mathematics, military studies, psychology, sociology, and speech. Officers and airmen enroll in the various courses to pursue Military Studies and other degrees.

The Andrews educational program complements that of Bolling Air Force Base. Personnel may enroll at either installation or they may enroll concurrently at both.

Further information may be obtained from Mr. Murphy Mears, Director of Education, REDwood 5-8900, Extension 4222, or this College.

## BALTIMORE

EDWARD F. COOPER, M.A., *Director*  
JOSEPHINE LEO, B.S., *Assistant Director*

An office of University College is maintained in the Administration Building, University of Maryland, Baltimore, at Lombard and Greene Streets, to serve as headquarters for the largest center of the College. This office also administers the programs in the environs of Baltimore.

During the academic year 1957-58, over two thousand students from Baltimore city and surrounding counties were enrolled in some 200 different courses. Students are currently working on degrees in several undergraduate colleges and in the Graduate School of the University.

### SCOPE OF OFFERINGS

The plan of the Baltimore Office each semester is to offer courses in the various natural and physical sciences, business administration, economics, education, government and politics, geography, history, industrial education, languages, philosophy, psychology, sociology, speech and English that may be applied toward meeting the requirements of the various undergraduate and graduate degree programs of the University.

A printed schedule of courses for Baltimore and nearby centers is issued each semester by the Baltimore Office. Copies of this schedule may be secured by writing the office of the director or by calling PLaza 2-1100, Extension 292.

Institutes and short courses upon request may be provided to meet the specialized educational needs of vocational and avocational groups.

### SERVICE TO BUSINESS, INDUSTRIAL AND PROFESSIONAL GROUPS

In addition to the regular academic offerings listed above, this office provides consultant service opportunities for specialized institutes, short courses, certificate programs, and in-service training programs that are specifically designed to meet the educational needs of business, industrial and professional groups.

### EDUCATION

The College of Education supports a steadily expanding offering for teachers and school officials in Baltimore city and in surrounding counties.

Courses are offered which teachers may apply toward bachelor's degrees and master's degrees in education and/or to meet certification requirements.

Those teachers planning to enroll in courses for the purpose of meeting certification requirements are advised to consult with the State Department of Education and/or their local school supervisor.

## *Baltimore Center, Bolling Air Force Base*

Students pursuing degree programs are advised to consult with their faculty adviser.

### **CHILD STUDY**

The staff of the Institute for Child Study, College of Education, offers each year a series of courses on Human Development, and on the techniques of child study for members of the educational profession. The sequences of three courses called Child Development Laboratory I, II, and III, which involve the direct year-long study of children as individuals and in groups, are offered to teachers in the field. Teachers should contact their Boards of Education for offerings in their community. Graduate courses in Human Development are also available through cooperation of the Institute.

### **COMMUNITY STUDY**

With the cooperation of the Departments of Education of the City of Baltimore, and Baltimore County, a series of community study courses are offered to supplement the child development work by presenting the social environment of the child. University courses dealing with city and community organization and structure are regularly scheduled to enrich the community study program.

### **NURSING**

The School of Nursing, through University College, offers a program for graduate nurses leading toward a Bachelor of Science degree in Nursing.

For further information, nurses should contact the Baltimore Offices of University College, University of Maryland, Lombard and Greene Streets, Baltimore 1, Maryland.

### **INDUSTRIAL EDUCATION**

Courses conducted in the Baltimore Center by the Industrial Education Department are selected from the total offerings which constitute the three curriculums administered by the Department; namely, the Industrial Arts curriculum, the Education for Industry curriculum and the Vocational-Industrial teacher certification curriculum. Courses required for Vocational-Industrial teacher certification are arranged in a two-year cycle so that these persons may obtain the necessary course work within two years.

## **BOLLING AIR FORCE BASE**

An extensive educational program is offered at the Bolling Air Force Base each semester and during each summer session. The education office at Bolling,

with the cooperation of this College, plans each program several months in advance.

The past year's offerings included courses in business administration, economics, education, English, foreign languages, government and politics, history, mathematics, military studies, psychology, sociology and speech. Officers and airmen enroll in the various courses to pursue Military Studies and other degrees.

The Bolling educational program complements that of the Andrews Air Force Base. Personnel may enroll at either installation or they may enroll concurrently at both.

Further information may be obtained from Mr. S. Edward Corbin, Education Services Officer, JOhnson 2-9000, Extension 679 and 348, or this College.

## BUREAU OF SHIPS, DEPARTMENT OF THE NAVY

18TH AND CONSTITUTION AVE., N.W., WASHINGTON, D. C.

The educational program at the Bureau of Ships is designed to aid Navy engineers and scientists to work toward degrees in engineering, physics, and mathematics. This program is offered in cooperation with the training divisions in the Navy bureaus and this College.

During the past year, advanced courses were offered in mechanical engineering and mathematics.

Further information may be obtained from Mrs. Edna K. Trudeau, Training Officer, Room 2438, Main Navy, LIBerty 5-6700, Extension 64847, or this College.

## DAVID TAYLOR MODEL BASIN — NAVY DEPARTMENT

CARDEROCK, MARYLAND

A program of graduate study in fluid mechanics, aeronautical engineering, mechanical engineering, physics and mathematics is offered at the David Taylor Model Basin, under the sponsorship of the Glenn L. Martin College of Engineering and Aeronautical Sciences of the University of Maryland.

Courses in aeronautical engineering, mathematics, mechanical engineering and physics, were offered during the past year. These courses were intended to review mathematical methods and physical principles.

Further details about this program may be obtained from Mr. W. H. Struhs, Head of Training and Safety Branch, EMerson 5-2600, Extension 394, or this College.



## FORT DETRICK—FREDERICK, MARYLAND

The educational program at Fort Detrick is planned to advance the technical knowledge of the personnel employed at this post. This program is planned by the Detrick Education Office and this College.

During the past year courses were offered in agronomy, bacteriology, business administration, chemistry, chemical engineering, English and mathematics.

Further information relative to this program may be obtained from Miss Veronica Catlett, Project Officer, Frederick, MONument 3-4111, Extension 5147, or this College.

## FORT GEORGE G. MEADE—HEADQUARTERS SECOND ARMY

Courses offered at Fort Meade are designed to meet the educational needs of military and civilian personnel at this post. A regular sequence of courses is arranged for each semester to permit Army personnel to pursue the Military Studies and General Studies degrees.

During the past year courses in English, geography, foreign languages, government and politics, history, mathematics, military studies, psychology and speech were offered.

Further information may be obtained from Mr. David C. Berry, Director of Education, Army Education Center, ORchard 4-3311, Extension 2575, or this College.

## FORT HOLABIRD

Courses offered at Fort Holabird are planned to meet the educational needs of the military and civilian personnel at this installation. A sequence of courses is arranged to permit Army personnel to pursue the Military Studies and General Studies degrees.

During the past year courses were offered in government and politics, mathematics, military studies, foreign languages, and speech. Since Fort Holabird is located a short distance from Baltimore many of the military and civilian personnel find it desirable to enroll concurrently in Baltimore and Holabird courses. This arrangement permits a wider selection of courses.

Further information may be obtained from Mr. Gustaf Berglund, Education Adviser, Fort Holabird, MEDford 3-9000, Extension 2110, or the Baltimore office of this College, PLaza 2-1100, Extension 292, 293.

## FORT RITCHIE—CASCADE, MARYLAND

Courses offered at Fort Ritchie are designed to meet the educational needs of military and civilian personnel located at this post.

During the past year courses in English, history and speech were offered.

Further information may be obtained by writing to the Education Officer, Fort Ritchie, Cascade, Maryland, or telephoning Highfield 360, Extension 41103, or this College.

## NATIONAL BUREAU OF STANDARDS

CONNECTICUT AVENUE AT UPTON STREET, N.W., WASHINGTON 25, D. C.

Courses at the National Bureau of Standards are offered under the direction of the Bureau's Educational Committee and this College. The program includes graduate and undergraduate courses.

During the past year the educational program at the National Bureau of Standards included courses in chemistry, electrical engineering, mathematics, mechanical engineering and physics. An announcement of courses for each year is available from the Registrar at the National Bureau of Standards.

Further information concerning this program may be obtained from Mr. Joseph Hilsenrath, member of the Educational Committee, or Mrs. L. L. Chapin, Registrar, EMerson 2-4040, Extension 366, The Manse, or this College.

## NAVAL ORDNANCE LABORATORY

WHITE OAK, SILVER SPRING, MARYLAND

The center at the Naval Ordnance Laboratory is set up for Navy Department personnel in the Washington area. For the most part, courses at this center are of graduate level.

In addition to its regular program, special courses are offered from time to time in support of new projects. A number of courses are arranged at the College Park campus evenings and Saturdays to amplify the NOL program.

During the past year, advanced courses were offered in aeronautical engineering, electrical engineering, mathematics, mechanical engineering, and physics. A printed brochure is available which explains the NOL program.

Additional information may be obtained from Mr. D. E. Starnes, Chief, Training Division, or Mr. James Reese, Education and Training Specialist, HEmlock 4-7100, Extension 411, NOL, or this College.

## NAVAL RESEARCH LABORATORY

ANACOSTIA

Courses under this program are designed primarily for Navy scientists doing graduate study in the fields of chemistry, engineering, mathematics, and physics and are given in cooperation with the Science Education Section of the

Naval Research Laboratory. A printed brochure is available at the Naval Research Laboratory which explains the program.

During the past year the Naval Research Laboratory program included advanced courses in electrical engineering, mathematics, mechanical engineering, metallurgy and physics.

Further information concerning this program may be obtained from Mr. John Harms, Assistant Personnel Officer or Mr. William McLaughlin or A. W. Philbrick, JOHnson 3-6600, Extension 856, or this College.

## PATUXENT RIVER—UNITED STATES NAVAL AIR STATION

The Patuxent program is aimed primarily at meeting the graduate needs of personnel interested in electrical, mechanical, and aeronautical engineering. During the past year, advanced courses were offered in chemical engineering, electrical engineering, mathematics, and mechanical engineering.

Further information concerning this program may be obtained from Mr. Harry Ocker, Personnel Director, Industrial Relations Division, Patuxent River, or Dr. H. R. Reed, Professor of Electrical Engineering, College Park campus, or this college.

## THE PENTAGON

The Pentagon program, sponsored by the Military District of Washington's University Center, is operated in cooperation with the Army, Air Force, Navy, and Marine Corps, and includes both military and civilian Department of Defense personnel in the Washington area. Well in advance of program planning, the respective services conduct polls to determine the educational needs of military personnel.

The educational offering at the Pentagon represents the world's largest off-campus university program for military personnel currently in operation. During the past year courses were offered in business administration, economics, English, foreign languages, geography, government and politics, history, journalism, mathematics, military studies, philosophy, psychology, sociology, and speech. The majority of the students at the Pentagon are primarily interested in courses leading to the B.A. degree in General Studies and the B.S. degree in Military Studies. Others are working toward degrees in various colleges. An increasing number of students are pursuing graduate degrees.

Further information concerning this program may be obtained during the day from Miss Dorothy Martin and Mr. George Bowman at the Pentagon, Room 3C147, University Center, OXford 7-8015 or OXford 7-2823. Air Force personnel may obtain information from Mrs. Lois Roberts, Pentagon, Room 5D476, OXford 7-7874 or OXford 7-1863, or this College.

## WALTER REED ARMY MEDICAL CENTER

WASHINGTON 12, D. C.

Courses are given at the Army Medical Center in cooperation with the Troop Information and Education Office at the post. Course offerings are planned to meet the needs of Army and Air Force personnel interested in working for military and general studies degrees and nurses interested in meeting requirements for a professional degree.

Courses in English, foreign languages, government and politics, history, mathematics, military studies, psychology, sociology and speech have been offered during the past year.

Further information regarding the Walter Reed program may be obtained from Mr. Robert E. Hynes, Education Adviser, RAndolph 3-1000, Extension 3670, or this College.

## UNIVERSITY COLLEGE OVERSEAS DIVISIONS

RAY EHRENSBERGER, Ph.D., *Dean*  
STANLEY J. DRAZEK, Ph.D., *Associate Dean*  
RALPH J. KLEIN, Ph. D., *Assistant Dean for General Studies*  
T. DODSON STAMPS, Brig. Gen., U.S. Army (Ret.), B.A., B.S.,  
*Assistant Dean for Military Studies*

### EUROPEAN DIVISION HEIDELBERG, GERMANY

HERMAN BEUKEMA, Brig. Gen., U.S. Army (Ret.), LL.D., *Director*  
ERNEST H. HOFER, B.Litt., (Oxon.), *Associate Director*  
DON E. TOTTEN, Ph.D., *Assistant Director, France and Spain*  
ROBERT C. LARSON, Ph.D., *Assistant Director, Public Relations*  
JOSEPH E. DELLEN, Ph.D., *Assistant Director, United Kingdom*  
PAUL DICKSON, Ph.D., Col., U.S. Army (Ret.), *Resident Dean, Munich Branch*  
ERNEST HERBSTER, B.A., *Comptroller, European Division*  
ANN R. REED, B.A., *Assistant Director of Admissions*  
MARGERY O. FRY, B.S., *Evaluator, Admissions*  
MONA J. BIAS, M.A., *Assistant Registrar*  
KLAUS BURKHARDT, B.S., *Supervisor of Language Courses*  
ULRICH A. GRONKE, Dr.Phil., *Assistant Language Supervisor*  
ROSE BEYER, Dr.Sc., *Supervisor of Mathematics Courses*  
MARY ANN LAKE, M.S., *Administrative Assistant*  
JAN HARTMAN, M.A., *Manager, Book Department*

### HISTORY

The success of the course work offered by the University of Maryland at the Pentagon since 1947 encouraged high officials in the Army and in the Air Force to propose the establishment of similar operations in Europe (with other institutions undertaking like assignments in other areas; notably, the University of California in the Pacific and Louisiana State University in the Caribbean).

Exploratory studies revealed the need and indicated the probable benefits of such a program. Classes began on October 31, 1949, at six of the Armed Forces Education Centers selected for the initiation of the program: Berlin, Frankfurt, Heidelberg, Munich, Nurnberg, and Wiesbaden. The Administrative Offices were opened in Heidelberg in April, 1950.



The fact that 1,851 students registered for the first term was interpreted as an expression of appreciation for the co-operative efforts of the Armed Forces and the University in bringing college-level instruction to where the men were located. In successive terms the program has been expanded and decentralized, so that over ten thousand students were served during the past academic year.

The Program is operated on an accelerated basis, with classes meeting two evenings each week for eight weeks. There are five terms each year. The terms are as follows:

September—November  
November—January  
February—March  
April—May  
June—July

Because of the size and extent of its program, the European Division has more autonomy than do the various stateside centers. It maintains an office in Heidelberg with Admissions, Registrar, and Comptroller sections, and an office in London to serve students from the Third Air Force and Seventh Air Division.

#### COURSES OFFERED

The courses of study arranged for the European Program lead primarily to the Bachelor of Science degree in Military Studies and the Bachelor of Arts degree in General Studies. Courses are offered in business administration, economics, English, government and politics, history, foreign languages, mathematics, military studies, philosophy, psychology, sociology, and speech.

#### TEACHING PERSONNEL

A faculty of 400 to 500 full- and part-time teachers is maintained during each academic term. All full-time lecturers are selected at College Park in consultation with the respective department heads. Each department head appoints one of the instructors assigned overseas to act as his departmental representative on matters pertaining to departmental policy. A close liaison is maintained between the department head and his overseas representative.

Foreign Languages and Mathematics courses are taught by qualified nationals who have been approved by the respective department heads or their representatives.

The number of education centers sponsoring classes varies from term to term as dictated by military policy and other factors that result from the movement of military personnel. Classes are being offered during the current academic year at the following overseas centers:

*Centers in  
Europe, North Africa and the Middle East*

| ETHIOPIA       | GERMANY (cont.) | GERMANY (cont.) | SPAIN (cont.)  |
|----------------|-----------------|-----------------|----------------|
| Asmara         | Berlin          | Schwaebisch     | Madrid         |
|                | Bitburg         | Gmuend          | Madrid-        |
| FRANCE         | Bremerhaven     | Schwaeblich     | Torrejón       |
| Bussac         | Darmstadt       | Hall            | Moron          |
| Camp des       | Erding          | Schweinfurt     | Sevilla        |
| Loges          | Erlangen        | Schwetzingen    | Villa Tobas    |
| Chateauroux    | Frankfurt       | Sembach         | Zaragoza       |
| Chaumont       | Freising        | Spangdahlem     | TURKEY         |
| Chinon         | Friedberg       | Straubing       | Adana          |
| Dreux          | Fuerstenfeld-   | Stuttgart       | Ankara         |
| Etain          | bruck           | Ulm             | Izmir          |
| Evreux         | Fuerth          | Vaihingen       | Main Site      |
| Fontainebleau  | Garmisch        | Wackernheim     | UNITED KINGDOM |
| Jeanne D'Arc   | Gelnhausen      | Wertheim        | Alconbury      |
| Laon           | Giessen         | Wiesbaden       | Bentwaters     |
| La Rochelle    | Goeppingen      | Wildflecken     | Brize Norton   |
| Maison Fort    | Hahn            | Worms           | Bruntingthorpe |
| Metz           | Hanau           | Wuerzburg       | Burtonwood     |
| Nancy          | Heidelberg      | Zweibruecken    | Bushy Hall     |
| Orleans        | Heilbronn       | GREECE          | Bushy Park     |
| Phalsbourg     | Herzo Base      | Athens          | Chelveston     |
| Paris          | Hof             | ITALY           | Chicksands     |
| Poitiers       | Idar Oberstein  | Aviano          | Croughton      |
| Rocheffort     | Kaiserslautern  | Leghorn         | Denham         |
| Toul Gen.      | Karlsruhe       | Naples          | Fairford       |
| Depot          | Kirch Goens     | Verona          | Feltwell       |
| Toul-Rosieres  | Kornwestheim    | Vicenza         | Greenam        |
| Troisfontaines | Landshut        | LIBYA           | Common         |
| Verdun         | Landstuhl       | Tripoli         | Grosvenor      |
| Vitry-le-      | Leipzig         | MOROCCO         | Square         |
| Francois       | Ludwigsburg     | Ben Guerir      | High           |
|                | Mainz           | Nouasseur       | Wycombe        |
| GERMANY        | Mannheim        | Rabat           | Kirknewton     |
| Amberg         | Munich          | Sidi Slimane    | Lakenheath     |
| Ansbach        | Murnau          | NETHERLANDS     | Mildenhall     |
| Aschaffenburg  | Neubruেকে       | Soesterberg     | Prestwick      |
| Augsburg       | Neckarsulm      | NORWAY          | Sculthorpe     |
| Babenhausen    | Nellingen       | Oslo            | Shepherd's     |
| Bad Aibling    | Nurnberg        | SAUDI ARABIA    | Grove          |
| Bad Kissingen  | Oberammergau    | Abqaiq          | South Ruislip  |
| Bad Kreuznach  | Pirmassens      | Dhahran Air     | Upper Heyford  |
| Bad Toelz      | Ramstein        | Field           | West Drayton   |
| Bamberg        | Regensburg      | Rastanura       | Wethersfield   |
| Baumholder     | Rhein-Main      | SPAIN           | Wimpole        |
| Bayreuth       | Rothwesten      | Constantina     | Park           |

## COOPERATION OF EDUCATION BRANCHES

The European Program would not be possible except for the valuable assistance and support of the Education Branches of the Armed Services. Full-time staff members are provided military transportation to and from Europe. Extensive assistance is given to the University in matters involving registration, quarters, and many other essentials of university existence in the centers of troop concentration in Europe.

American civilians entitled to logistical support are admitted to the University of Maryland classes, provided that no armed services personnel are excluded thereby.

## DEGREE OPPORTUNITIES

Credit earned in the European program is considered as residence credit at the University of Maryland, as is credit earned at the stateside centers. Students may pursue studies leading to degrees at the University of Maryland or transfer credits to other institutions.

## THE MUNICH PROGRAM

The Overseas Program makes available at Munich a program of freshman and sophomore level courses, primarily designed to meet the needs of service dependents who are qualified for college work. The courses are of American college standard and are for the most part those required in the curricula of the College of Arts and Sciences. These are two semesters per academic year.

Dormitory facilities are available for authorized dependents. Board, room, tuition, and a student activities fee amount to \$415 per semester, and books involve a total cost of approximately \$40.00 per year.

## OVERSEAS AND MUNICH BRANCH CATALOGS

Independent catalogs for the European Program and for the Munich Branch are published by the Heidelberg office. A copy of either catalog may be obtained from University College at College Park or by addressing a request to: University of Maryland, APO 403, New York, New York.

## UNIVERSITY COLLEGE

RAY EHRENSBERGER, Ph.D., *Dean*

STANLEY J. DRAZEK, Ph.D., *Associate Dean*

RALPH J. KLEIN, Ph.D., *Assistant Dean for General Studies*

T. DODSON STAMPS, Brig. Gen., U.S. Army (Ret.), B.A., B.S.,  
*Assistant Dean for Military Studies*

## ATLANTIC DIVISION

GEORGE J. DILLAVOU, M.A., *Director*

### NEWFOUNDLAND

At the request of the North East Air Command, University College inaugurated a Newfoundland program on July 1, 1951. This program is operated on an accelerated basis, with classes meeting two evenings each week for eight weeks.

Classes in accounting, economics, English, foreign languages, geography, government and politics, history, mathematics, sociology, and speech were offered during 1958-59. Courses are offered at the following Newfoundland Centers:

Harmon Air Force Base—Stephenville  
Pepperrell Air Force Base—St. John's  
Argentia Naval Station—Argentia

### LABRADOR

Goose Bay

### GREENLAND

At the request of the North East Air Command, University College inaugurated the Greenland program in February, 1953.

Classes in business administration, economics, English, French, German, geography, government and politics, history, and mathematics were offered during the 1958-59 terms at the following Greenland bases:

Sondrestrom (BW-8)  
Thule

Further information regarding the Newfoundland, Labrador and Greenland centers may be obtained from Captain John Cantrell, Personnel Services Division, Headquarters, Eighth Air Force, Westover Air Force Base, Massachusetts, or University College, University of Maryland, College Park, Maryland.

### ICELAND

At the request of the Military Air Transport Service a center was established at Keflavik, Iceland, in December 1951. Courses have been offered in

economics, English, foreign languages, history, government and politics, sociology, and speech.

Further information relative to Iceland offerings may be obtained from the Education Officer, Keflavik Air Force Base, Keflavik, Iceland, or Mr. Hugh Reddon, Headquarters, Military Air Transport Service, Scott Air Force Base, Illinois, or this College.

#### BERMUDA

At the request of the Military Air Transport Service a center was established at Kindley Air Force Base in September, 1957.

Information concerning offerings at Kindley Air Force Base may be obtained by writing Miss Geraldine C. O'Donnell, Education Adviser, Kindley A.F.B., Bermuda, or from this college.

At the request of the U.S. Navy a center was established at the Naval Operating Base on Bermuda in September, 1958.

Information concerning course offerings may be obtained by writing to the I. & E. office, N.O.B., U.S. Navy, Bermuda, or from this College.

#### LAJES, THE AZORES

Classes began in August, 1959, at the Azores Air Transport Station. Information concerning course offerings may be obtained from Mr. Fred Souk, Education Adviser, Azores Air Transport Station, APO 406, New York, or from this College.

#### ADMINISTRATION

The Newfoundland, Greenland, Iceland, Labrador, and Bermuda offerings are administered as the Atlantic Division from University College at College Park.

This program would not be possible without the valuable assistance and support of the Educational Personnel at the respective centers.



## UNIVERSITY COLLEGE

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STANLEY J. DRAZEK, Ph.D., *Associate Dean*

RALPH J. KLEIN, Ph.D., *Assistant Dean for General Studies*

T. DODSON STAMPS, Brig. Gen., U.S. Army (Ret.), B.A., B.S.,  
*Assistant Dean for Military Studies*

## FAR EAST DIVISION

MASON G. DALY, Ph.D., *Director*

LESLIE R. BUNDGAARD, Ph.D., *Associate Director*

JANUS POPPE, Ph.D., *Assistant Director and Comptroller*

GENE I. BUNDGAARD, B.E., *Assistant Director of Admissions and Registrations*

### HISTORY

In August, 1956, the University of Maryland facilities were extended into Japan, Okinawa and Korea. Taiwan and Guam were added during the first year of operation. This extension was made possible by arrangements both with the military and with the University of California, which had conducted an educational program in the Far East since 1950. On its withdrawal, the University of California recommended to the Far East Command that the University of Maryland expand its Overseas Program by offering courses to American military and civilian personnel stationed across the Pacific Ocean. When the Maryland classes opened in September of 1956, there were 1,820 course enrollments in 83 classes at 42 centers. Average enrollments currently top 3,000 per term.

The program in the Far East, like that in Europe, is operated on a term basis, with classes meeting two evenings each week during an eight week period. There are five terms each year.

The administrative offices for the Far East Division are located in Tokyo, Japan. The Tokyo office maintains a director, an associate director, an assistant director and comptroller and an assistant director of admissions and registrations.

### COURSES OFFERED

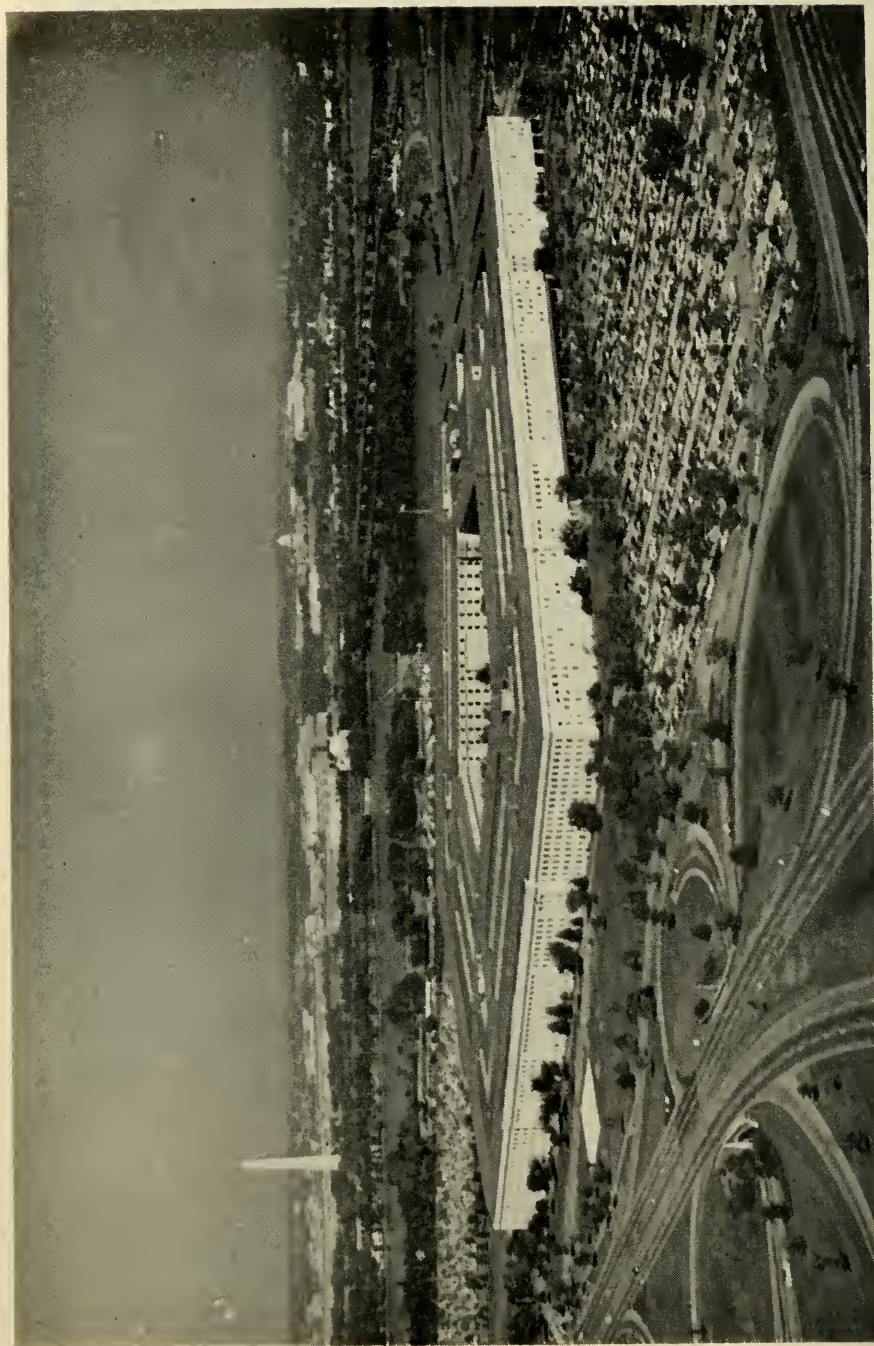
The courses of study arranged for the University's program in the Far East are aimed primarily toward the attainment of the Bachelor of Science degree in Military Studies and the Bachelor of Arts degree in General Studies. Courses are taught in business administration, economics, English, foreign languages, government and politics, history, mathematics, military studies, philosophy, psychology, sociology and speech.



### HEADQUARTERS BUILDING FOR A WORLD-WIDE EDUCATION PROGRAM

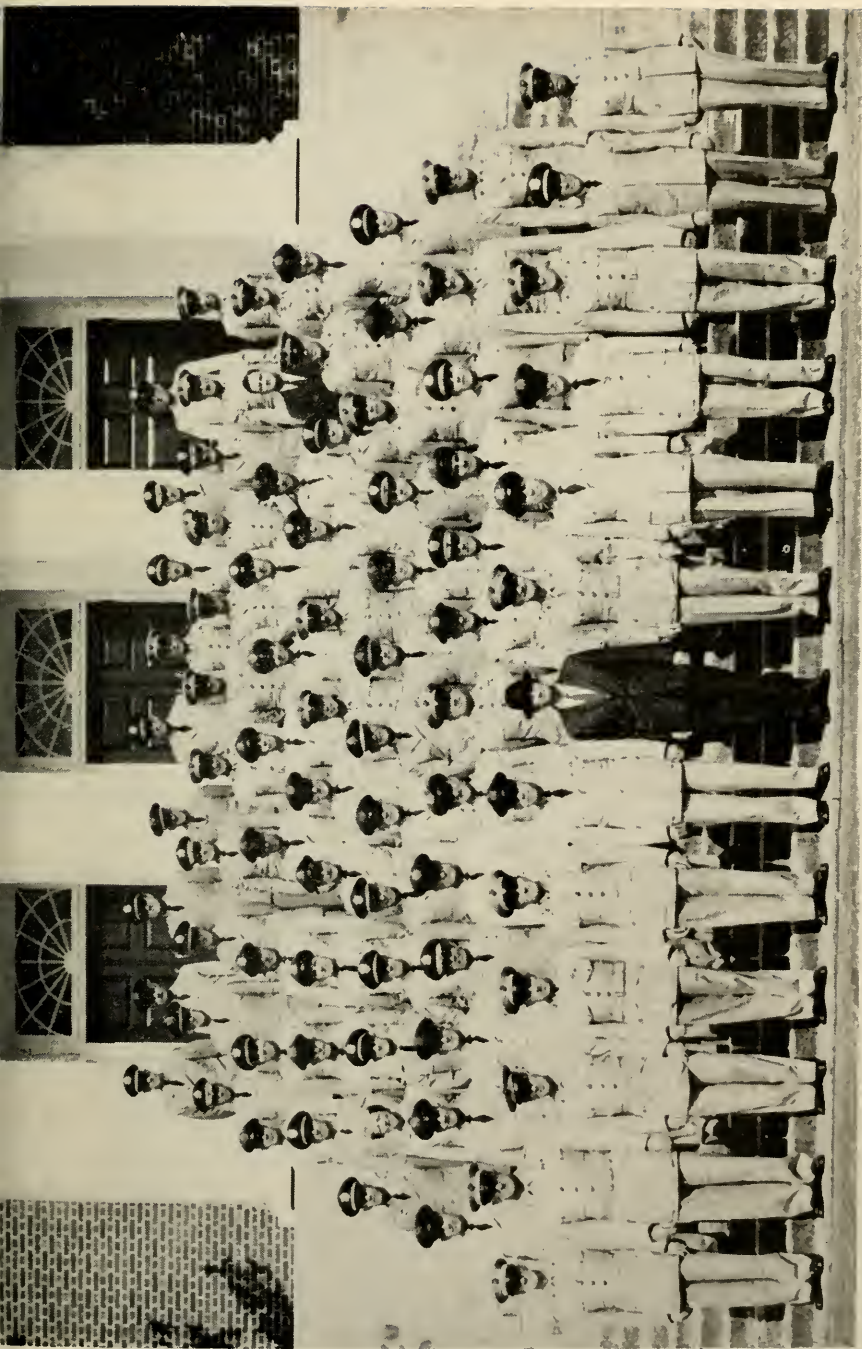
*The central administrative offices of the University College are located in the Skinner Building on the College Park campus. This building also houses the College of Education and the Graduate School. Other principal offices of University College are located in Heidelberg, Germany, and Tokyo, Japan.*





### THE PENTAGON

Off-campus sources have been available for military and civilian Department of Defense personnel here since the Fall of 1947. With more than 1,000 students each semester, the Pentagon Program is the largest off-campus center serving the



### "BOOTSTRAPPERS"

Here are 79 of the 107 military personnel enrolled as full-time on-campus students in the Spring of 1959 under "Operation Bootstrap." In the center, front row, is Brig. Gen. T. Dodson Stamps, U. S. Army (Ret.) Assistant Dean for Military Studies, University College.





### TOKYO COMMENCEMENT

These Japanese guests, some clad in the traditional dress of Nippon and some in Western style, are shown entering the Kudan Kaikan auditorium on Commencement Day 1959 in Tokyo. Thirty-seven students graduated from the University of Maryland and accompanied to Japan, addressed the Far East Division



## TEACHING PERSONNEL

A faculty of between 130 and 160 full and part-time teachers is maintained during each academic term. All teachers are selected at College Park, in consultation with the respective department heads. A close liaison is maintained between department heads and their respective departmental instructors.

Centers where Maryland courses are offered vary from term to term, as dictated by military policy and other factors which result because of the movement of military personnel. Classes are currently being offered at the following centers in the Far East:

## JAPAN

Ashiya AB  
 Atsugi NAS  
 Brady AB  
 Camp Drake  
 Chitose AEC  
 Fleet Activ. Yokosuka  
 Fuchu AS  
 Iwakuni MAS  
 Johnson AB  
 Kishine Barracks (Yokohama)  
 Misawa AB  
 Tachikawa AB  
 U.S. Army Map Service (Tokyo)  
 Washington Hts.  
 Yokota AB  
 Zama AEC

Inchon AEC

Kimpo AB

Kunsan AB

Osan AB

Camp Page

Pusan AEC

Seoul AEC

Camp Shoonover

I Corps

Camp Red Cloud

Camp St. Barbara

Camp Stanley

1st Cav. Div.

Hq., 1st Cav.

Hq., 2nd Cav.

4th Cav.

Hq., 1st BG, 5th Cav.

Hq., 1st BG, 7th Cav.

Hq., 1st BG, 8th Cav.

## OKINAWA

Kadena AB  
 Machinato AEC  
 Naha AB  
 Naha AEC  
 Sobe AEC  
 Sukiran AEC

7th Inf. Div.

East Camp Casey

7th Div. Arty.

West Camp Casey

Camp Hovey

Camp Kaiser

Camp Beavers

## GUAM

Andersen AFB

## KOREA

Ascom AEC  
 Det. L, KMAG

## TAIWAN

Taipei

#### COOPERATION OF EDUCATION BRANCHES

The Far East Division would not be possible except for the valuable assistance and support of the armed services Education Branches. Full-time staff members are provided military transportation to and from centers in the Pacific area. Extensive assistance is given to the University in matters involving registration, quarters, and other essentials of the University's existence in centers of troop concentration in the Orient.

Personnel other than military may be admitted to classes on a space available basis.

#### DEGREE OPPORTUNITIES

Credit earned in the Far East Division is considered as residence credit at the University of Maryland, as is credit earned at stateside, European Division and other overseas centers. Students may either pursue studies leading to degrees in the University of Maryland, or they may transfer credits earned to other institutions.

#### ADDRESS FOR FURTHER INFORMATION

Information concerning the Far East Division may be obtained by writing to the Tokyo office. Inquiries should be addressed to: University of Maryland, 722 Washington Heights, APO 94, San Francisco, California.

## SECTION V

### COURSE DESCRIPTIONS

ALL CURRENT COURSES WHICH HAVE BEEN TAUGHT IN THE LAST THREE years through the University College are listed below. They are arranged in alphabetical order by academic department. The number of hours of credit is shown by the arabic numeral in parentheses after the title of the course.

Course numbers are designated as follows:

1 to 99—Courses for undergraduates

100 to 199—Courses for advanced undergraduates and graduates. (Not all 100-level courses may be taken for graduate credit.)

200 to 299—Courses for graduates only.

Courses listed in the catalogs of other colleges of the University may be offered by the University College if demand warrants and the academic department concerned approves.

### BOTANY

#### *Bot. 1. General Botany. (4)*

Lecture and laboratory. General introduction to botany, touching briefly on all phases of the subject. Emphasis is on the fundamental biological principles of the higher plants. Laboratory fee, \$5.00.

### BUSINESS ADMINISTRATION

#### *B. A. 10, 11. Organization and Control. (2, 2)*

Required in all Business Administration curriculums. A survey course treating the internal and functional organization of a business enterprise. B. A. 11 includes industrial management, organization and control.

#### *B. A. 20, 21. Principles of Accounting. (4, 4)*

Required in all Business Administration curriculums. Prerequisite, sophomore training. The fundamental principles and problems involved in accounting for proprietorships, corporation and partnerships.

### *For Advanced Undergraduates and Graduates*

#### *B. A. 100. Office Operations and Management. (3)*

Prerequisite, junior standing. Deals with the principles of scientific management as they apply to the examination, improvement, installation, and operation of the most effective paperwork methods and systems that a given organization can use to achieve

its objectives. Procedure flow analysis and form design for control of paperwork; process, work distribution, and layout charts, distribution of authority and responsibility for office activities are among the areas considered.

*B.A. 130. Elements of Business Statistics. (3)*

Prerequisite, junior standing and completion of Math. 5 and 6 or equivalent. Laboratory fee, \$3.00. An introductory course. Emphasis is placed upon statistical inference. Topics covered include statistical observation, frequency distributions, averages, measures of variability, elementary probability, sampling distributions, problems of estimation, simple tests of hypotheses, index numbers, time series, graphical and tabular presentation. Selected applications of the techniques are drawn from economics, industrial management, marketing and accounting.

*B. A. 140. Financial Management. (3)*

Prerequisite, Econ. 140. This course deals with the principles and practices involved in the organization, financing, and reconstruction of corporations; the various types of securities and their use in raising funds; apportioning income, risk, and control; intercorporate relations; and new developments. Emphasis on solution of problems of financial policy faced by management.

*B. A. 150a. Marketing Principles and Organization. (3)*

Prerequisite, Econ. 32 or 37. This is an introductory course in the field of marketing. Its purpose is to give a general understanding and appreciation of the forces operating in the institutions employed, and methods followed in marketing agricultural products, natural products, services, and manufactured goods.

*B. A. 150. Marketing Management. (3)*

Prerequisite, B.A. 150a. A study of the work of the marketing division in a going organization. The work of developing organizations and procedures for the control of marketing activities are surveyed. The emphasis throughout the course is placed on the determination of policies, methods, and practices for the effective marketing of various forms of manufactured products.

*B. A. 160. Personnel Management. (3)*

Prerequisite, Econ. 160. This course deals essentially with functional and administrative relationships between management and the labor force. It comprises a survey of the scientific selection of employees, "in-service" training, job analysis, classification and rating, motivation of employees, employee adjustments, wage incentives, employee discipline and techniques of supervision, and elimination of employment hazards.

*B. A. 163. Industrial Relations. (3)*

Prerequisite, Econ. 160. A study of the development and methods of organized groups in industry with reference to the settlement of labor disputes. An economic and legal analysis of labor union and employer association activities, arbitration, mediation, conciliation; collective bargaining, trade agreements, strikes, boycotts, lockouts, company unions, employee representation, and injunctions.

*B. A. 164. Recent Labor Legislation and Court Decisions. (3)*

Prerequisite B. A. 160 and senior standing. Case method analysis of the modern law of industrial relations. Cases include the decisions of administrative agencies, courts and arbitration tribunals.

*B. A. 166. Business Communications. (3)*

Prerequisite, junior standing. A systematic study of the principles of effective written communications in business. The fundamental aim is to develop the ability to write clear, correct, concise, and persuasive business letters and reports.

*B. A. 167. Job Evaluation and Merit Rating. (2)*

Prerequisite, B. A. 160. The investigation of the leading job evaluation plans used in industry, study of the development and administrative procedures, analyzing jobs and writing job descriptions, setting up a job evaluation plan, and relating job evaluation to pay scales. Study of various employee merit rating programs, the methods of merit rating, and the uses of merit rating.

*B. A. 169. Industrial Management. (3)*

Prerequisites, B. A. 11 and 160. Studies the operation of a manufacturing enterprise. Among the topics covered are product development, plant location, plant layout, production planning and control, methods analysis, time study, job analysis, budgetary control, standard costs, and problems of supervision. An inspection trip to a large manufacturing plant is made at the latter part of the semester.

*B. A. 177. Motion Economy and Time Study. (3)*

Prerequisite, B. A. 169. A study of the principles of motion economy, simo charts, micromotion study, the fundamentals of time study, job evaluation, observations, standard times, allowances, formula construction, and wage payment plans.

*B. A. 178. Production Planning and Control. (2)*

Prerequisite, B. A. 169. Analysis of the man- and material- and machine requirements for production according to the several types of manufacture. The development of application of inventory records, load charts, production orders, schedules, production reports, progress reports and control reports. One lecture period and one laboratory period each week.

*B. A. 179. Problems in Supervision. (3)*

Prerequisite, B. A. 169. A case study course of supervisory problems divided into difficulties with subordinates, with associates and with superiors. The purposes of the course are to apply general principles of industrial management to concrete cases and to extract principles from a study of cases.

*B. A. 180, 181. Business Law. (4, 4)*

Prerequisite, senior standing. Required in all Business Administration curriculums. Legal aspects of business relationships, contracts, negotiable instruments, agency, partnerships, corporations, real and personal property, and sales.

*B. A. 229. Studies of Special Problems in the Fields of Control and Organization.*

(Arranged.)

*B. A. 262. Seminar in Contemporary Trends in Labor Relations.*

(Arranged.)



B. A. 265. *Development and Trends in Industrial Management.* (3)

B. A. 266. *Research in Personnel Management.*

(Arranged.)

B. A. 267. *Research in Industrial Relations.*

(Arranged.)

B. A. 269. *Studies of Special Problems in Employer-Employee Relationships.*

(Arranged.)

B. A. 271. *Theory of Organization.* (3)

(Arranged.)

B. A. 299. *Thesis.*

(Note: The student must take the initiative in arranging to see the professor concerned, at the latter's convenience).

## CHEMISTRY

*Chem. 1, 3. General Chemistry.* (4, 4)

Prerequisite, 1 year high school algebra or equivalent. Laboratory fee, \$10.00.

*Chem. 11, 13. General Chemistry.* (3, 3)

Lecture and laboratory. Laboratory fee, \$10.00. An abbreviated course in general chemistry for students in home economics and pre-nursing. This course is open only to students registered in home economics and pre-nursing.

*Chem. 19. Elements of Quantitative Analysis.* (4)

Prerequisite, Chem. 15. Laboratory fee, \$10.00.

*Chem. 101. Advanced Inorganic Chemistry.* (2)

Prerequisite, Chem. 37, 38, 123.

*Chem. 141, 143. Advanced Organic Chemistry.* (2, 2)

Prerequisites, Chem. 37, 38. An advanced study of the compounds of carbon.

*Chem. 161, 163. Biochemistry.* (2, 2)

Two lectures per week. Prerequisites, Chem. 31, 33, or Chem. 35, 37. This course is designed primarily for students in agriculture, bacteriology, or chemistry, and for those students in home economics who used a more extensive course of biochemistry than is offered in Chem. 81, 82.

*Chem. 162, 164. Biochemistry Laboratory.* (2, 2)

Prerequisites, Chem. 32, 34, or Chem. 36, 38. Laboratory fee, \$10.00.

*Chem. 303. Electrochemistry.* (3)

*Chem. 360. Research.*

## ECONOMICS

### *Econ. 31, 32. Principles of Economics. (3, 3)*

Prerequisite, sophomore standing. Econ. 31 is a prerequisite for Econ. 32. Required in the Business Administration Curriculums. In Econ. 31 basic concepts, the monetary system, the national accounts, national income analysis, and business cycles are introduced. In Econ. 32 emphasis is placed on price theory, distribution, international trade, and economic development.

### *Econ. 102. National Income Analysis. (3)*

Prerequisite, Econ. 32. An analysis of national income accounts and the level of national income and employment.

### *Econ. 131. Comparative Economic Systems. (3)*

Prerequisite, Econ. 32 or 37. An investigation of the theory and practice of various types of economic systems. The course begins with an examination and evaluation of the capitalistic system, and is followed by an analysis of alternative types of economic systems such as fascism, socialism, and communism.

### *Econ. 132. Advanced Economic Principles. (3)*

Prerequisite, Econ. 32. Required for Economics majors. This course is an analysis of price and distribution theory with special attention to recent developments in the theory of imperfect competition.

### *Econ. 136. International Economic Policies and Relations. (3)*

Prerequisite, Econ. 32 or 37. A descriptive and theoretical analysis of international trade. Full consideration is given to contemporary problems facing international trade and to the impact of governmental policy upon international commercial relations.

### *Econ. 138. Economics of the Soviet Union. (3)*

Prerequisite, Econ. 32 or 37. Required by students in Soviet Area and Language Program. (European Program.) Analysis of the organization, operating principles and performance of the Soviet economy with attention to the historical and ideological background, planning, resources, industry, agriculture, domestic and foreign trade, finance, labor, and the structure and growth of national income.

### *Econ. 140. Money and Banking. (3)*

Prerequisite, Econ. 32 or 37. A study of the organization, functions, and operation of our monetary, credit, and banking system; the relation of commercial banking to the Federal Reserve System; the relation of money and credit to prices; domestic and foreign exchange; and the impact of public policy upon banking and credit.

### *Econ. 160. Labor Economics. (3)*

Prerequisite, Econ. 32 or 37. The historical development and chief characteristics of the American labor movement are first surveyed. Present-day problems are then examined in detail, wage theories, unemployment, social security, labor organization, and collective bargaining.

*Econ. 170. Monopoly and Competition. (3)*

Prerequisite, Econ. 32 or 37. Changing structure of the American economy, price policies in different industrial classifications of monopoly and competition in relation to problems of public policy.

## EDUCATION

*Ed. 52. Children's Literature. (2)*

Prerequisite, English 1, 2. A study of literary values in prose and verse for children.

*Ed. 90. Development and Learning. (3)*

A study of the principles of learning and their application to school situations. Designed to meet the usual teacher-certification requirement for educational psychology.

*Ed. 102. History of Education in the United States. (3)*

A study of the origins and development of the chief features of the present system of education in the United States.

*Ed. 107. Philosophy of Education. (2-3)*

A study of the great educational philosophers and their contributions to modern education. Earlier periods.

*Ed. 121. The Language Arts in the Elementary School. (2)*

Teaching of spelling, handwriting, oral and written expression, and creative expression. Special emphasis given skills having real significance to the pupils.

*Ed. 122. The Social Studies in the Elementary School. (2)*

Consideration given to curriculum, organization and methods of teaching, evaluation of newer materials in the field.

*Ed. 123. The Child and the Curriculum. (3)*

Relationship of the elementary school curriculum to child growth and development. Recent trends in curriculum organization; the effect of environment on learning; readiness to learn; and adapting curriculum content and methods to maturity levels of children.

*Ed. 124. Arithmetic in the Elementary School. (2)*

Emphasis on materials and procedures which help pupils sense arithmetical meanings and relationships. Helps teachers gain a better understanding of the number system and arithmetical processes.

*Ed. 125. Art in Elementary Schools. (2)*

Concerned with art methods and materials for elementary schools. Includes laboratory experiences with materials appropriate for elementary schools.

*Ed. 130. The Junior High School. (2-3)*

A general overview of the junior high school. Purposes, functions and characteristics of this school unit, a study of its population, organization, program of studies, methods, staff, and other similar topics, together with their implications for prospective teachers.

*Ed. 133. Methods of Teaching Social Studies in Secondary School. (2-3)*

Designed to give practical training in the everyday teaching situations. Use of various lesson techniques, audio and visual aids, reference materials, and testing programs and the adoption of teaching methods to individual and group differences. Present tendencies and aims of instruction in the social studies.

*Ed. 134. Materials and Procedures for the Secondary School Core Curriculum. (3)*

This course is designed to bring practical suggestions to teachers who are in charge of core classes in junior and senior high schools. Materials and teaching procedures for specific units of work are stressed. Laboratory fee, \$1.00.

*Ed. 137. Methods of Teaching Mathematics and Science in Secondary School. (2-3)*

Considers such topics as objectives, selection, organization, and presentation of subject matter, appropriate classroom methods and procedures, instructional materials and evaluation of learning experiences in the areas of mathematics, the physical sciences, and the biological sciences. Laboratory fee, \$2.00.

*Ed. 141. Methods of Teaching English in Secondary Schools. (3)*

Content and method in teaching the English language arts.

*Ed. 145. Principles and Methods of Secondary Education. (2-3)*

This course is concerned with the principles and methods of teaching in junior and senior high schools.

*Ed. 147. Audio-Visual Education. (3)*

Laboratory fee, \$1.00. Sensory impressions in their relation to learning; projection apparatus, its cost and operation; slides, film-strips, and films; physical principles underlying projection.

*Ed. 150. Educational Measurement. (2)*

Constructing and interpreting measures of achievement.

*Ed. 153. The Teaching of Reading. (2)*

Concerned with the fundamentals of developmental reading instruction, including reading readiness, use of experience records, procedures in using basal readers, the improvement of comprehension, teaching reading in all areas of the curriculum, uses of children's literature, the program in word analysis, and procedures for determining individual needs.

*Ed. 154. Remedial Reading Instruction. (2)*

For supervisors and teachers who wish to help retarded readers. Concerned with causes of reading difficulties, the identification and diagnosis of retarded pupils, instructional materials, and teaching procedures. Prerequisite, Ed. 153 or the equivalent.

## *Education*

### *Ed. 160. Educational Sociology. (2)*

Deals with data of the social sciences which are germane to the work of teachers. Implications of democratic ideology for educational endeavor, educational tasks imposed by changes in population and technological trends, the welfare status of pupils, the socio-economic attitudes of individuals who control the schools, and other elements of community background.

### *Ed. 161. Principles of Guidance. (3)*

Overview of principles and practices of guidance-oriented education.

### *Ed. 163, 164, 165. Community Study Laboratory I, II, and III. (2, 2, 2)*

Involves experience from the educational standpoint with the agencies, institutions, cultural patterns, living conditions, and social processes which play significant roles in shaping the behavior of children and adults and which must be understood by individuals working toward school and community improvement. Each participant becomes a member of a group in a given area of study and concentrates on problems which have direct application in his school situation. Readings are integrated with techniques of study.

### *Ed. 189. Workshops, Clinics, and Institutes. (1-6)*

The following types of educational enterprises may be scheduled under this course heading: workshops conducted by the College of Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil-testing contests, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals, and supervisors. The maximum number of credits may be earned under this course symbol toward any degree is six semester hours, the symbol may be used two or more times until six semester hours have been reached.

## *For Graduates (offered only in Baltimore Center)*

### *Ed. 203. Problems in Higher Education. (3)*

A study of present problems in higher education.

### *Ed. 210. The Organization and Administration of Public Education. (3)*

The basic course is school administration. Deals with the organization and administration of school systems—at the local, state, and federal levels; and with the administrative relationships involved.

### *Ed. 211. The Organization, Administration, and Supervision of Secondary Schools. (2)*

The work of the secondary school principal. The course includes topics such as personnel problems, supervision, school-community relationships, student activities, schedule making, and internal financial accounting.

### *Ed. 212. School Finance and Business Administration. (3)*

An introduction to principles and practices in the administration of the public school finance activity. Sources of tax revenue, the budget, and the function of finance in the educational program are considered.



*Ed. 214. School Plant Planning. (2)*

An orientation course in which the planning of school buildings is developed as educational designing with reference to problems of site, building facilities, and equipment.

*Ed. 216. High School Supervision. (2)*

Prerequisite, teaching experience. Deals with recent trends in supervision; the nature and function of supervision; planning supervisory programs, evaluation and rating; participation of teachers and other groups in policy development; school workshops; and other means for the improvement of instruction.

*Ed. 217. Administration and Supervision in Elementary Schools. (2)*

Problems in organizing and administering elementary schools and improving instruction.

*Ed. 219. Seminar in Educational Administration and Supervision. (2-4)**Ed. 223. Practicum in Personnel Relationships. (2-6)*

Prerequisite, consent of instructor. Enrollment limited. Designed to help teachers, school administrators, and other school staff members to learn to function more effectively in developing educational policy in group situations. Each student in the course is required to be working concurrently in the field with a group of school staff members or citizens on actual school problems.

*Ed. 225. School Public Relations. (3)*

A study of the interrelationships between the community and the school. Public opinion, propaganda, and the ways in which various specified agents and agencies within the school have a part in the school public relations program are explored.

*Ed. 226. Child Accounting. (2)*

An inquiry into the record keeping activities of the school system, including an examination of the marking system.

*Ed. 227. Public School Personnel Administration. (3)*

A comparison of practices with principles governing the satisfaction of school personnel needs, including a study of tenure, salary schedules, supervision, rewards, and other benefits.

*Ed. 229. Seminar in Elementary Education. (2)*

Primarily for individuals who wish to write seminar papers. Enrollment should be preceded by at least 12 hours of graduate work in Education.

*Ed. 234. The School Curriculum. (2-3)*

A foundations course embracing the curriculum as a whole from early childhood through adolescence, including a review of historical developments, an analysis of conditions affecting curriculum change, an examination of issues in curriculum making, and a consideration of current trends in curriculum design.

*Ed. 235. Principles of Curriculum Development. (3)*

Curriculum planning, improvement, and evaluation in the schools; principles for the selection and organization of the content and learning experiences; ways of working in classroom and school on curriculum improvement.

## Education

### *Ed. 245. Introduction to Research. (2)*

Intensive reading, analysis, and interpretation of research; applications to teaching fields; the writing of abstracts, research reports, and seminar papers.

### *Ed. 250. Analysis of the Individual. (3)*

Knowing students through use of numerous techniques. Ed. 161 desirable as prerequisite.

### *Ed. 253. Guidance Information. (2)*

Finding, filing, and using information needed by students for making choices, plans, and adaptations in school, occupations, and in interpersonal relations. Ed. 161 is desirable as prerequisite.

### *Ed. 254. Organization and Administration of Guidance Programs. (2)*

Instilling the guidance point of view and implementing guidance practices. All guidance courses except Seminar are prerequisites.

### *Ed. 260. School Counseling: Theoretical Foundations and Practice. (3)*

Prerequisites, Ed. 161, 250, 253. Prerequisites may be waived by instructor. Exploration of learning theories as applied to counseling in schools, and practices which stem from such theories.

### *Ed. 263, 264. Aptitudes and Aptitude Testing. (2, 2)*

(Offered in Baltimore.)

### *Ed. 267. Curriculum Construction Through Community Analysis. (2)*

Prerequisites, Ed. 163, 164, 165. Selected research problems in the field of community study with emphasis on the Baltimore area.

### *Ed. 269. Seminar in Guidance. (2)*

### *Ed. 288. Special Problems in Education. (1-6)*

Master of education or doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for credit under this number.

### *Ed. 399. Research—Thesis. (1-6)*

Students who desire credit for a master's thesis, a doctoral dissertation, or a doctoral project should use this number.

## CHILDHOOD EDUCATION

### *C. Ed. 110. Child Development III. (3)*

Developmental growth of the child from the prenatal period through the early childhood years, with implications for home and school practice. For students in other colleges of the University.

### *C. Ed. 115. Children's Activities and Activities Materials. (3)*

Prerequisites, C. Ed. 100, 101, or 110. Laboratory fee, \$5.00. Storytelling; selection of books for pre-school children; the use, preparation, and presentation of such

raw materials as clay, paints (easel and finger), blocks, wood, and scrap materials for nursery school and kindergarten.

*C. Ed. 116. Creative Music for Young Children. (2-3)*

Prerequisite, Mus. 16 or equivalent. Creative experiences in songs and rhythms; correlation of music and everyday teaching with the abilities and development of each level; study of songs and materials; observation and teaching experience with each age level.

## HUMAN DEVELOPMENT EDUCATION

*H. D. Ed. 102, 103, 104. Child Development Laboratory I, II and III. (2, 2, 2)*

Prerequisite, general or educational psychology or any course in Human Development. These courses involve the direct study of children throughout the school year. Each participant gathers a wide body of information about an individual; presents the accumulating data from time to time to the study group for criticism and group analysis, and writes an interpretation of the dynamics underlying the child's learning, behavior and development.

*H. D. Ed. 200. Introduction to Human Development and Child Study. (3)*

This course offers a general overview of the scientific principles which describe human development and behavior and makes use of these principles in the study of individual children. Each student will observe and record the behavior of an individual child throughout the semester and must have one half-day a week free for this purpose. The course is basic to further work in child study and serves as a prerequisite for advanced courses where the student has not had field work or at least six weeks of workshop experience in child study.

*H. D. Ed. 201. Biological Bases of Behavior. (3)*

This course emphasizes that understanding human life, growth and behavior depends on understanding the ways in which the body is able to capture, control and expand energy. Application throughout is made to human body processes and implications for understanding and working with people. H. D. Ed. 250 a or b or c must be taken concurrently with this course. (Prerequisite, H. D. Ed. 200.)

*H. D. Ed. 202. Social Bases of Behavior. (3)*

This course analyzes the socially inherited and transmitted patterns of pressures, expectations and limitations learned by an individual as he grows up. These are considered in relation to the patterns of feeling and behaving which emerge as the result of growing up in one's social group. H. D. Ed. 250a or b or c must be taken concurrently with this course. (Prerequisite, H. D. Ed. 200.)

*H. D. Ed. 250a, 250b, 250c. Direct Study of Children. (1, 1, 1)*

This course provides the opportunity to observe and record the behavior of an individual child in a nearby school. These records will be used in conjunction with the advanced courses in Human Development and this course will be taken concurrently with such courses. Teachers active in their jobs while taking advanced courses in Human Development may use records from their own classrooms for this course. May not be taken concurrently with H. D. Ed. 102, 103, 104, or H. D. Ed. 200.

## INDUSTRIAL EDUCATION

(The courses below do not constitute a complete listing of Industrial Education offerings but are the courses currently offered at off-campus centers.)

*Ind. Ed. 1. Mechanical Drawing. (2)*

Two laboratory periods a week. This course constitutes an introduction to orthographic multi-view and isometric projection. Emphasis is placed upon the visualization of an object when it is represented by a multi-view drawing and upon the making of multi-view drawings. The course carries through auxiliary views, sectional views, dimensioning, conventional representation and single stroke letters. Laboratory fee, \$5.00.

*Ind. Ed. 2. Elementary Woodworking. (2)*

Two laboratory periods a week. This is a woodworking course which involves primarily the use of hand tools. The course is developed so that the student uses practically every common woodworking hand tool in one or more situations. There is also included elementary wood finishing, the specifying and storing of lumber, and the care and conditioning of tools used. Laboratory fee, \$5.00.

*Ind. Ed. 28. Electricity I. (2)*

Two laboratory periods a week. An introductory course to electricity in general. It deals with the electrical circuit, elementary wiring problems, the measurement of electrical energy, and a brief treatment of radio. Laboratory fee, \$5.00.

*Ind. Ed. 48. Electricity II. (2)*

Principles involved in A-C and D-C electrical equipment, including heating measurements, motors and control, electro-chemistry, the electric arc, inductance and reactance, condensers, radio, and electronics. Laboratory fee, \$5.00.

*Ind. Ed. 50. Methods of Teaching. (2)*

For vocational and occupational teachers of shop and related subjects. The identification and analysis of factors essential to helping others learn; types of teaching situations and techniques; the use of instructional aids; measuring results and grading student progress in shop and related technical subjects.

*Ind. Ed. 60. Observation and Demonstration Teaching. (2)*

(Offered in Baltimore only.) Prerequisite, Educational Psychology and/or Methods of teaching Vocational and Occupational Subjects. Primarily for vocational and occupational teachers. Sixteen hours of directed observation and demonstration teaching. Reports, conferences, and critiques constitute the remainder of scheduled activities in this course.

*Ind. Ed. 124 a, b. Organized and Supervised Work Experience.*

(3 credits for each internship period, total: 6 credits). This is a work experience sequence planned for students enrolled in the curriculum, "Education for Industry". The purpose is to provide the students with opportunities for first-hand experiences with business and industry. The student is responsible for obtaining his own employment with the coordinator advising him as regards the job opportunities which have optimum learning value.



The nature of the work experience desired is outlined at the outset of employment and the evaluations made by the student and the coordinator are based upon the planned experiences.

The time basis for each internship period is 6 forty-hour weeks or 240 work hours. Any one period of internship must be served through continuous employment in a single establishment. Two internship periods are required. The two internships may be served with the same business or industry.

The completion for credit of any period of internship requires the employer's recommendation in terms of satisfactory work and work attitudes.

More complete details are found in the handbook prepared for the student of this curriculum.

*Ind. Ed. 143. Industrial Safety Education I. (2)*

This course deals briefly with the history and development of effective safety programs in modern industry and treats causes, effects, and values of industrial safety education inclusive of fire prevention and hazard controls.

*Ind. Ed. 144. Industrial Safety Education II. (2)*

This course presents exemplary safety practices through conference discussions, group demonstrations, and organized plant visits to selected industrial situations. Methods of fire precautions and safety practices are emphasized. Evaluative criteria in safety programs are formulated.

*Ind. Ed. 150. Training Aids Development. (3)*

Study of the aids in common use as to their source and application. Special emphasis is placed on principles to be observed in making aids useful to shop teachers. Actual construction and application of such aids will be required.

*Ind. Ed. 161. Principles of Vocational Guidance. (2)*

This course identifies and applies the underlying principles of guidance to the problems of educational and vocational adjustment of students.

*Ind. Ed. 164. Shop Organization and Management. (2)*

This course covers the basic elements of organizing and managing an Industrial Education program including the selection of equipment and the arrangement of the shop.

*Ind. Ed. 165. Modern Industry. (3)*

This course provides an overview of manufacturing industry in the American social, economic and culture pattern. Representative basic industries are studied from the viewpoints of personnel and management organization, industrial relations, production procedures, distribution of products, and the like.

*Ind. Ed. 167. Problems in Occupational Education. (2)*

The purpose of this course is to obtain, assemble, organize, and interpret data relative to the scope, character and effectiveness of occupational education.

*Ind. Ed. 168. Trade or Occupational Analysis. (2)*

Provides a working knowledge of occupational and job analysis which is basic in



## Education

organizing vocational-industrial instruction. This course should precede Ind. Ed. 169.

### *Ind. Ed. 169. Course Construction. (2)*

Surveys and applies techniques of building and reorganizing course materials for effective use in vocational and occupational schools.

### *Ind. Ed. 170. Principles of Vocational Education. (2)*

The course develops the Vocational Education movement as an integral phase of the American program of public education.

### *Ind. Ed. 171. History of Vocational Education. (2)*

An overview of the development of Vocational Education from primitive times to the present.

## For Graduates

### *Ind. Ed. 207. Philosophy of Industrial Arts Education. (3)*

This course is intended to assist the student in his development of a point of view as regards Industrial Arts and its relationship with the total educational program. He should, thereby, have a "yardstick" for appraising current procedures and proposals and an articulateness for his own professional area.

### *Ind. Ed. 214. School Shop Planning and Equipment Selection. (3)*

This course deals with principles involved in planning a school shop and provides opportunities for applying these principles. Facilities required in the operation of a satisfactory shop program are catalogued and appraised.

### *Ind. Ed. 216. Supervision of Industrial Arts. (2)*

### *Ind. Ed. 240. Research in Industrial Arts and Vocational Education. (2)*

This is a course offered by arrangement for persons who are conducting research in the areas of Industrial Arts and Vocational Education.

### *Ind. Ed. 241. Content and Method of Industrial Arts. (3)*

Various methods and procedures used in curriculum development are examined and those suited to the field of Industrial Arts education are applied. Methods of and devices for Industrial Arts instruction are studied and practiced.

### *Ind. Ed. 248. Seminar in Industrial Arts and Vocational Education. (2)*

## MUSIC EDUCATION

### *For Advanced Undergraduates and Graduates*

### *Mus. Ed. 128. Music for the Elementary Classroom Teacher. (2)*

Prerequisite, Mus. 16 or consent of instructor. A study of the group activities and materials through which the child experiences music. The course is designed to aid both music specialists and classroom teachers. It includes an outline of objectives and a survey of instructional methods.

## For Graduates

*Mus. Ed. 204. Current Trends in Music Education (Seminar). (2)*

A survey of current philosophies and objectives of music in the schools. The scope and sequence of the music curricula, vocal and instrumental, on the elementary and secondary levels.

## SCIENCE EDUCATION

*Sci. Ed. 105. Workshop in Science for Elementary Schools. (2)*

Designed to help teachers acquire general science understandings and to develop teaching materials for practical use in classrooms. Includes experiments, demonstrations, constructions, observations, field trips, and use of audio-visual materials. The emphasis is on content and method related to science units in common use in elementary schools. Laboratory fee, \$2.00.

Note: For courses in physical education and health education, see the Catalog of the College of Physical Education, Recreation, and Health.

## SPECIAL EDUCATION

*Sp. Ed. 170. Introduction to Special Education. (3)*

Designed to give an understanding of the needs of all types of exceptional children, stressing preventive and remedial measures.

*Sp. Ed. 171. Characteristics of Exceptional Children. (3)*

A. Mentally Retarded—B. Gifted

Studies the diagnosis, etiology, physical, social and emotional characteristics of exceptional children. Describes how the educational program should be modified to utilize the full capacity of these children.

*Sp. Ed. 172. Education of Exceptional Children. (3)*

A. Mentally Retarded—B. Gifted

Offers practical and specific methods of teaching exceptional children. Selected observation of actual teaching may be arranged. (Prerequisite, Sp. Ed. 171 or equivalent)

*Sp. Ed. 173. Curriculum for Exceptional Children. (3)*

A. Mentally Retarded—B. Gifted

Examines the principles and objectives guiding curriculum for exceptional children. Gives experience in developing curriculum for these children. Studies various curricula currently in use. (Prerequisite, Sp. Ed. 171 or equivalent)

*Ed. 278. Seminar in Special Education. (2)*

An overview of education of exceptional children.

## AERONAUTICAL ENGINEERING

*Aero. E. 101. Aerodynamics. (3)*

Three lectures a week. Prerequisite, Phys. 21 and Math. 21. Basic fluid mechanics and the aerodynamic theory.

## *Aeronautical Engineering, Chemical Engineering*

### *Aero. E. 211. The Design and Use of Wind Tunnels (Supersonic). (3)*

The design and use of wind tunnels (supersonic). Review of basic aerodynamics and thermodynamics. Problems in supersonic tunnel design such as pumping, power supply, condensation and dries. Equipment for measuring results such as balances, manometer, optical instruments, such as schlieren, spark illumination and X-ray equipment. Investigations in supersonic wind tunnels are described with special reference to similitude required for conversion to full scale.

### *Aero. E. 212, 213. Bodies at Supersonic Speeds. (3, 3)*

First and second semesters. Prerequisites, degree in Aero. E. or M. E. or equivalent, and consent of instructor. Brief review of gasdynamics, drag, lift, stability, and damping on a body in a supersonic stream. Special aerodynamic problems in the design of supersonic missiles. Methods for obtaining accurate test data on the aerodynamic characteristics of supersonic missiles.

### *Aero. E. 214. Seminar.*

(In accordance with work outlined by the Aero. E. Staff.) Prerequisite, graduate standing.

### *Aero. E. 215. Research.*

(Credit in accordance with work outlined by Aero. E. staff.) Prerequisite, graduate standing.

### *Aero. E. 216. Selected Aeroballistics Problems. (3)*

Prerequisites, degree in Aero. E. or M. E. or equivalent and consent of instructor. Physical processes and aerothermodynamic laws connected with the flow around supersonic missiles. Boundary layer problems and the transfer of heat and mass.

## CHEMICAL ENGINEERING

### *Ch. E. 240, 241. Advanced Heat and Mass Transfer. (2, 2)*

First and second semesters. Elective of graduate students in Chemical Engineering and others. Prerequisite, permission of the Department. The technical and scientific elements of the mathematical theory of heat and mass transfer.

### *Ch. E. 399. Research in Chemical Engineering. Research in Nuclear Engineering.*

Credit hours to be arranged. The investigation of special problems and the preparation of a thesis in partial fulfillment of the requirements of an advanced degree. Laboratory fee \$8.00 per semester (Research in Chemical Engineering). Laboratory fee, \$10.00 per semester (Research in Nuclear Engineering).

## NUCLEAR ENGINEERING COURSES

### *Ch. E. 142. Environmental Considerations of Nuclear Engineering. (3)*

Three lectures a week. Prerequisite, permission of instructor. Engineering analysis of protection of the public and the environment from the hazards of nuclear energy operations. Emphasis is on the handling and disposal of gaseous, liquid and solid radioactive wastes. Meteorological, hydrological and geological phases are included.

Typical problems encountered from mining of ores through nuclear reactor operations and chemical separations are considered. Legislative and economic factors, site selection, plant design and operations as related to the environment are discussed.

*Ch. E. 301. Seminar in Nuclear Engineering. (1)*

First and second semesters. One meeting a week. Survey of nuclear engineering literature, and oral presentation of prepared reports. Since the content of this course is constantly changing, a student may receive a number of credits by re-registration.

*Ch. E. 302, 303. Nuclear Reactor Engineering. (3, 3)*

Three lectures a week. Prerequisite, permission of instructor. Introduction to the engineering problems of the design, construction and operation of typical nuclear reactors, including general design, nuclear reactor theory, materials of construction, heat transfer, control, etc. Emphasis is toward commercial nuclear reactors.

*Ch. E. 311. Nuclear Separation Engineering. (2)*

Two lectures a week. Prerequisite, permission of instructor. Application of chemical engineering to the chemical and isotopic separations necessary for nuclear reactor operation. These separations include (1) processing of uranium, thorium and other ores, (2) chemical separation of plutonium, uranium, fission products and other elements from materials irradiated in nuclear reactors, (3) treatment and disposal of radioactive wastes, (4) isotopic separation of U235 and heavy water.

*Ch. E. 315. Non-Power Uses of Nuclear or High Energy Radiation. (2)*

Two lectures a week. Prerequisite, permission of instructor. An engineering survey of the current applications and those under development. Included are such uses of radiation as producing valuable radioactive and stable isotopes, synthesizing chemicals, and preserving foods. The changes in the design and operation of power-only nuclear reactor complexes required for such additional applications are discussed.

## METALLURGICAL OPTION

*Met. 150, 151. Physical Metallurgy. (3, 3)*

*Met. 152, 153. Physical Metallurgy Lab. (2, 2)*

Laboratory fee, \$8.00.

*Met. 164, 166. Thermodynamics of Metallurgical Processes. (3, 3)*

Three lectures a week. Prerequisites, Chem. 187, 189; Chem. 188, 190. The application of the principles of thermodynamics to metallurgical systems with emphasis on steel making; laws of chemical reactions; materials and reactions in steel making processes; applications of theory to steel making; applications of theory to selected non-ferrous systems.

*Met. 172. Light Metals and Alloys. (2)*

First semester. Two lectures a week. Prerequisites, Met. 150, 151. The physical metallurgy of aluminum, magnesium, titanium, and their alloys. Discussion of the classic researches that have determined the course of thinking regarding such metals and alloys. Pertinent phase diagrams of industrial importance to light alloys. The special metallurgical processes influencing the fabrication and use of light alloys.



*Met. 188, 189. Alloy Steels I, II. (2, 2)*

Two lectures per week. Prerequisites, graduate or undergraduate standing. (Met. 188 is not prerequisite to Met. 189). Recent advances in the physical metallurgy of steel; ferrite, cementite, and austenite; the isothermal transformation of austenite; decomposition of austenite by continuous cooling; the effects of various metallurgical treatments on the mechanical properties of steels. The properties of quenched and tempered steels; importance of hardenability in engineering applications, calculation of hardenability; variables affecting hardenability; intensifiers; effects of alloying elements on the mechanical properties of steels; efficient use of alloying elements in steel. (Note: To be offered at off-campus naval installations as determined by departmental and registration requirements.)

*Met. 228. Seminar in Metallurgy. (1)*

One meeting a week. Required of graduate students in metallurgical curriculum. Survey of metals literature, and oral presentation of prepared reports. The content of this course is constantly changing, so a student may receive a number of credits by re-registration.

*Met. 230, 231. Mechanical Metallurgy. (3, 3)*

Three lectures a week. Prerequisites, Math. 114, 115; Met. 182, 183. Theory of plastic flow and rupture of polycrystalline metals; the influence of combined stresses, rate of deformation and temperature variation on the flow and rupture of metals. Flow and fracture in single crystals; theoretical crystal plasticity, theory of failure, recovery, recrystallization, and texture formation.

*Met. 232, 233. Advanced Physical Metallurgy. (3, 3)*

Three lectures a week. Required of graduate students in metallurgical curriculum. The principles of X-ray metallography; the atomic theory of metals; magnetic materials; phase equilibria; review of important binary and ternary system, diffusion and transformations in the solid state. (Offered at the Navy Department.)

*Met. 238. Metallurgy of Nuclear Reactor Materials I. (2)*

First semester. Two lectures a week. Prerequisites, Met. 150, 151. Theory and practice relating to metals such as uranium, thorium, and plutonium. The preparation of such metals in their purest state for use in nuclear reactors. The physical, metallurgical and mechanical characteristics of fissionable metals, their melting, casting, fabrication, and heat treatment. The alloys of uranium, thorium, and plutonium. Theoretical considerations and precautions in their preparation, investigation and use. Discussion of phase diagrams of nuclear alloy systems.

*Met. 239. Metallurgy of Nuclear Reactor Materials II. (2)*

Second semester. Two lectures a week. Prerequisite, Met. 238. Theory and practice of nuclear metals used in reactors including structural materials such as beryllium and zirconium, and metals used for transfer of heat such as sodium, bismuth, and various low melting alloys. Discussion of pertinent phase diagrams. Radiation damage, mass transfer, and other specialized effects.

*Met. 399. Research in Metallurgy.*

Credit hours to be arranged. The investigation of special problems and the preparation



of a thesis in partial fulfillment of the requirements of an advanced degree. Laboratory fee, \$8.00 per semester.

## ELECTRICAL ENGINEERING

### *E. E. 1. Basic Electrical Engineering. (4)*

Prerequisites, Math. 21 and Phys. 21 or concurrent registration. Required of sophomores in electrical engineering. Laboratory fee, \$4.00. Basic concepts of electric potential, current power, and energy, d-c circuit analysis by the mesh-current and nodal methods, network theorems, magnetic field concepts; magnetic effects of engineering importance.

### *E. E. 60. Electricity and Magnetism. (3)*

Prerequisites, Math. 21, Phys. 21, and E. E. 1. Required of juniors in electrical engineering. Electromagnetism as applied to electrical engineering; electric field theory with emphasis on capacitance calculations, magnetic field theory with emphasis on inductance calculations; boundary layer phenomena.

### *E. E. 65. Direct-Current Machinery. (3)*

Prerequisites, Math. 21, Phys. 21, and E. E. 1. Required of juniors in electrical engineering. Laboratory fee, \$4.00. Construction, theory of operation, and performance characteristics of direct-current generators, motors, and control apparatus. Experiments on the operation and characteristics of direct-current generators and motors.

### *E. E. 100. Alternating-Current Circuits. (4)*

Prerequisites, coverage (by courses) in Math. 20-21, Phys. 20-21, and E. E. 1. Required of juniors in electrical engineering. Laboratory fee, \$4.00. Single-, and polyphase-circuit analysis under sinusoidal and non-sinusoidal conditions of operation. Mesh-current and nodal methods of analysis. Harmonic analysis by the Fourier series method. Theory and design of turned coupled circuits.

### *E. E. 101. Engineering Electronics. (4)*

Prerequisite, E. E. 100. Required of juniors in electrical engineering. Laboratory fee, \$4.00. Theory and applications of electron tubes and associated circuits with emphasis on equivalent circuit and graphical analysis of audio amplifiers, theory of feedback amplifiers.

### *E. E. 102. Alternating Current Machinery. (4)*

Prerequisites, E. E. 65 and E. E. 100. Required of seniors in electrical engineering. Laboratory fee \$4.00. The operating principles of alternating-current machinery considered from theoretical, design, and laboratory points of view. Synchronous generators and motors; single and polyphase transformers; three-phase induction generators and motors; single-phase induction motors.

### *E. E. 104. Communications. (3)*

Prerequisites, E. E. 60 and E. E. 100. Required of juniors in electrical engineering. Long-line theory applied to audio-frequency and ultra-high-frequency systems. Elements of filter theory; impedance matching; Maxwell's equations in rectangular and cylindrical coordinates and in scalar notation; elements of rectangular wave guide theory.

### *E. E. 108. Electric Transients. (3)*

Prerequisites, E. E. 101, and Math. 64. Required of seniors in electrical engineering.

## Electrical Engineering

Current, voltage, and power transients in lumped-parameter networks. Introduction and utilization of Laplace transformers.

### E. E. 110. *Transistor Circuitry*. (3)

Prerequisite, E. E. 101. P-n junction theory; point contact and junction-type transistors; transistor parameters; equivalent circuits; typical transistor amplifier and oscillator circuits.

### E. E. 114. *Applied Electronics*. (3)

Three lectures a week. Prerequisite, E. E. 101. Detectors and discriminators; gas tube characteristics and associated circuits; photoelectric tubes and associated circuits; rectifiers and regulators; vacuum tube instruments.

### E. E. 120. *Electromagnetic Waves*. (3)

Prerequisites, Math. 64 and senior standing in electrical engineering or physics. Basic mathematical theory of electromagnetic wave propagation employing Maxwell's equations in scalar and vector form and in generalized coordinates; application to wave-guide transmission.

### E. E. 130. *Electronic Analog Computers*. (3)

Prerequisites, E. E. 101, Math. 64. Principles of electronic computers of the analog type. Analog computing components, operational amplifiers, d-c amplifiers, instrument servos, multipliers, and function generators.

### E. E. 131. *Electronic Digital Computers*. (3)

Prerequisites, E. E. 101, Math. 64. Principles of electronic computers of the digital type. Digital computing operations, basic computing and control circuits, logical design, arithmetic unit, memory systems, and control units.

## For Graduates

### E. E. 201. *Electromagnetic Theory*. (3)

Prerequisite, E. E. 120 or E. E. 215. Theoretical analysis and engineering applications of Laplace's, Poisson's, and Maxwell's equations.

### E. E. 202, 203. *Transients in Linear Systems*. (3, 3)

Prerequisite, undergraduate major in electrical engineering, mechanical engineering, or physics. Operational circuit analysis; the Fourier integral, transient analysis of electrical and mechanical systems and vacuum tube circuits by the Laplace transformer method.

### E. E. 206, 207. *Microwave Engineering*. (3, 3)

Prerequisite, E. E. 201 or E. E. 216. Laboratory fee, \$4.00. Basic consideration in solving field problems by differential equations; circuit concepts and their validity at high frequency; propagation and reflection of electromagnetic waves; guided electromagnetic waves; high frequency oscillators and tubes; radiation engineering.

### E. E. 212, 213. *Servomechanism*. (3, 3)

Prerequisite, undergraduate major in electrical or mechanical engineering or physics. (It is desirable that the student should have had E. E. 202.) The design and analysis of regulatory systems, emphasizing servo-mechanisms. Regulatory systems are analyzed by means of the governing differential equations to provide background for more

practical studies of frequency spectrum analysis. Characteristics of actual systems and practical considerations are studied.

*E. E. 215, 216. Radio Wave Propagation. (3, 3)*

Prerequisite, undergraduate major in electrical engineering, physics, or mathematics. E. E. 215 required of M.S. degree candidates in electrical engineering. Maxwell's wave equation; concept of retarded magnetic vector potential, propagation over plane earth; propagation over spherical earth; refraction; meteorological effects; complex antennas; air-to-air propagation; lobe modulation.

*E. E. 218, 219. Signal Analysis and Noise. (3, 3)*

Prerequisite, undergraduate major in electrical engineering or physics. Fourier series and integrals; phase and frequency modulation; noise figures of linear systems; shot effect; power spectra; applications of correlation function; properties of noise.

*E. E. 230. Mathematics of Circuit Analysis. (3)*

Prerequisites, undergraduate major in electrical engineering or physics. The mathematics of Circuit analysis, including determinants, matrices, complex variable, and the Fourier integral.

*E. E. 231. Active Network Analysis. (3)*

Prerequisite, E. E. 230. The complex frequency plane; conventional feedback amplifier theory; Bode's mathematical definitions of feedback and sensitivity; theorems for feedback circuits; stability and physical realizability of electrical networks; Nyquist's and Routh's criteria for stability.

*E. E. 232, 233. Network Synthesis. (3, 3)*

Prerequisite, E. E. 231 or equivalent. Design of driving-point and transfer impedance functions with emphasis on the transfer loss and phase of minimum-phase networks; flow diagrams; physical network characteristics, including relations existing between the real and imaginary components of network functions; modern methods of network synthesis.

*E. E. 399. Electrical Engineering Research.*

Prerequisite, approved application for candidacy to the degree of Master of Science or Doctor of Philosophy in electrical engineering. Six semester hours of credit in E. E. 250 are required of M.S. degree candidates and a minimum of eighteen semester hours is required of Ph.D. candidates. A thesis covering an approved research problem and written in conformity with the regulations of the Graduate School is a partial requirement for either the degree of Master of Science or the degree of Doctor of Philosophy in electrical engineering.

## MECHANICAL ENGINEERING

### *For Graduates*

*M. E. 200, 201. Advanced Dynamics. (3, 3)*

Prerequisites, M. E. 24; Math. 64; M. E. 153, M. E. 155. Mechanics of machinery. Dynamic forces. Balancing of rotating parts. Vibrations and vibration damping. Critical speeds.

## *Mechanical Engineering, English*

### *M. E. 202, 203. Applied Elasticity. (3, 3)*

Prerequisite, Mech. 52; Math. 64; M. E. 107. Advanced methods in structural and experimental stress analysis. Advanced strength of materials involving beam problems, curved bars, thin plates and shells, buckling of bars, plates and shells, etc. Advanced work in stress concentrations, plastic deformations, etc., and problems involving instability of structures.

### *M. E. 220. Seminar.*

Credit in accordance with work outlined by mechanical engineering staff. Prerequisite, graduate standing in mechanical engineering.

### *M. E. 221. Research.*

Credit in accordance with work outlined by mechanical engineering staff. Prerequisite, graduate standing in mechanical engineering. Research in any field of mechanical engineering as applied mechanics, heat transfer, thermodynamics, heat, power, etc.

### *M. E. 225, 226. Advanced Properties of Metals and Alloys. (2, 2)*

Prerequisites, M. E. 23, 103, 152, 153. Properties of metals including tensile, impact, fatigue, damping, capacity, hardenability, wear, etc. Fabrication problems and selection of metals and alloys. Service failures. Properties required for nuclear engineering applications. Properties of metals at elevated and extremely low temperatures.

### *M. E. 227, 228. Theory of Elasticity. (3, 3)*

Prerequisites, M. E. 202, 203. Stress and strain at a point. Relation between stresses and strains, general equations of elasticity, plane strain and plane stress, torsion, bending, axially symmetric distribution of stress, plates, thermal stresses, strain energy and approximate methods.

## ENGLISH LANGUAGE AND LITERATURE

### *Eng. 1, 2. Composition and American Literature. (3, 3)*

Eng. 1 is the prerequisite of Eng. 2. Grammar, rhetoric, and the mechanics of writing; frequent themes. Readings will be in American literature.

### *Eng. 3, 4. Composition and World Literature. (3, 3)*

Prerequisites, Eng. 1, 2. Eng. 3, 4, or Eng. 5, 6, or an acceptable\* combination of the two required of sophomores. Practice in composition. An introduction to world literature, foreign classics being read in translation.

### *Eng. 5, 6. Composition and English Literature. (3, 3)*

Prerequisite, Eng. 1, 2. Credit will not be given for more than six hours of work in Eng. 3, 4, and 5, 6. Practice in composition. An introduction to major English writers.

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\* In practice this means one first semester course and one second semester course. Combination 3-6 or 4-5 is acceptable. 3-5 or 4-6 is not.



Eng. 8. *College Grammar*. (3)

Prerequisite, Eng. 1, 2. An analytical study of Modern English grammar, with lectures on the origin and history of inflectional and derivational forms.

Eng. 12. *Introduction to Creative Writing*. (2)

Prerequisite, Eng. 1, 2. Intended primarily for sophomores and juniors of demonstrated ability.

Eng. 14. *Expository Writing*. (3)

Prerequisite, Eng. 1, 2. Credit will not be given for Eng. 7 in addition to Eng. 14. Methods and problems of exposition; practice in several kinds of informative writing, including the preparation of technical papers and reports. Not offered on the College Park campus.

Eng. 101. *History of the English Language*. (3)

Eng. 115, 116. *Shakespeare*. (3, 3)

Twenty-one important plays.

Eng. 134, 135. *Literature of the Victorian Period*. (3, 3)

Eng. 139, 140. *The English Novel*. (3, 3)

English novels of the eighteenth and nineteenth centuries.

Eng. 143. *Modern Poetry*. (3)

The chief British and American poets of the twentieth century.

Eng. 144. *Modern Drama*. (3)

The drama from Ibsen to the present.

Eng. 145. *The Modern Novel*. (3)

Major English and American novelists of the twentieth century.

Eng. 148. *The Literature of American Democracy*. (3)

Literature which relates closely to the democratic tradition.

Eng. 150, 151. *American Literature*. (3, 3)

Representative American poetry and prose from colonial times to the present, with special emphasis on the literature of the nineteenth century.

Eng. 155, 156. *Major American Writers*. (3, 3)

Two writers studied intensively each semester.

Eng. 157. *Introduction to Folklore*. (3)

Historical background of folklore studies; types of folklore with particular emphasis on folktales and folksongs, and on American folklore.

Eng. 160. *Advanced Expository Writing*. (3)

Theories of composition; editing; style manuals. Practice in writing essays, critical papers, reports.



## Geography

### Eng. 170. *Creative Writing*. (2)

Prerequisite, permission of the instructor.

### Eng. 171. *Advanced Creative Writing*. (2)

Prerequisite, permission of the instructor.

## GEOGRAPHY

### Geog. 10, 11. *General Geography*. (3, 3)

Introduction to geography as a field of study. A survey of the content, philosophy techniques, and application of geography and its significance for the understanding of world problems.

### Geog. 20, 21. *Economic Geography*. (3, 3)

Cannot be taken for credit by students who have had Geog. 1 and 2 or 60 and 61. Study of the nature and geographic distribution of the world's resources, its agricultural, mineral, and other industries in relation to such basic factors as land forms, climates, population centers, and trade routes.

### Geog. 40. *Principles of Meteorology*. (3)

An introductory study of the weather. Properties and conditions of the atmosphere and methods of measurement. The atmospheric circulation and conditions responsible for various types of weather and their geographic distribution patterns. Practical applications.

### Geog. 41. *Introductory Climatology*. (3)

Prerequisite, Geog. 40, or permission of the instructor. Climatic elements and their controls, the classification and distribution of world climates, and relevance of climatic differences to human activities.

### Geog. 100. *Regional Geography of Eastern Anglo-America*. (3)

Prerequisite, Geog. 1, 2, or Geog. 10, or permission of the instructor. A study of the cultural and economic geography and the geographic regions of Eastern United States and Canada, including an analysis of the significance of the physical basis for present-day diversification of development, and the historical geographic background.

### Geog. 101. *Regional Geography of Western Anglo-America*. (3)

Prerequisite, Geog. 1, 2 or Geog. 10, or permission of the instructor. A study of Western United States, Western Canada and Alaska along the lines mentioned under Geog. 100.

### Geog. 103. *Geographic Concepts and Source Materials*. (2)

A comprehensive and systematic survey of geographic concepts designed exclusively for teachers. Stress will be placed upon the philosophy of geography in relation to the social and physical sciences, the use of the primary tools of geography, source materials, and the problems of presenting geographic principles.

### Geog. 104. *Geography of Major World Regions*. (2)

A geographic analysis of the patterns, problems, and prospects of the world's principal human-geographic regions, including Europe, Anglo-America, the Soviet Union, the

Far East, and Latin America. Emphasis upon the casual factors of differentiation and the role geographic differences play in the interpretation of the current world scene. This course is designed especially for teachers.

*Geog. 105. Geography of Maryland and Adjacent Areas. (3)*

Prerequisite, permission of the instructor. An analysis of the physical environment, natural resources, and population in relation to agriculture, industry, transport, and trade in the State of Maryland and adjacent areas.

*Geog. 120. Economic Geography of Europe. (3)*

The natural resources of Europe in relation to agricultural and industrial development and to present-day economic and national problems.

*Geog. 130, 131. Economic and Political Geography of Southern and Eastern Asia. (3, 3)*

A study of China, Japan, India, Burma, Indo-China and Indonesia; natural resources, population, and economic activities. Comparisons of physical and human potentialities of major regions and of the economic, social, and political development.

*Geog. 134, 135. Cultural Geography of East Asia. (3, 3)*

A comprehensive and systematic survey of the geographical distribution and interpretation of the major racial groups and cultural patterns of China, Japan, and Korea. Special emphasis will be placed on the unique characteristics of the peoples of these areas, their basic cultural institutions, outlooks on life, contemporary problems, and trends of cultural change. Designed especially for students of the social sciences, and those preparing for careers in foreign service, foreign trade, education, and international relations.

*Geog. 140. Soviet Lands. (3)*

The natural environment and its regional diversity. Geographic factors in the expansion of the Russian State. The geography of agricultural and industrial production, in relation to available resources, transportation problems, and diversity of population.

*Geog. 150. History and Theory of Cartography. (3)*

The development of maps throughout history. Geographical orientation, coordinates, and map scales. Map projections, their nature, use, and limitations. Principles of representation of features on physical and cultural maps. Modern uses of maps and relationships between characteristics of maps and use types.

*Geog. 155. Problems and Practices of Photo Interpretation. (3)*

Interpretation of aerial photographs with emphasis on the recognition of landforms of different types and man-made features. Study of vegetation, soil, and other data that may be derived from aerial photographs. Types of aerial photographs and limitations of photo interpretation.

*Geog. 160. Advanced Economic Geography I. Agricultural Resources. (3)*

Prerequisite, Geog. 1 and 2 or Geog. 10. The nature of agricultural resources, the major types of agricultural exploitation in the world, and the geographic distribution of certain major crops and animals in relation to the physical environment and economic geographic conditions. Main problems of conservation.

*Geog. 161. Advanced Economic Geography II. Mineral Resources. (3)*

Prerequisite, *Geog. 1* and *2*, or *Geog. 10*. The nature and geographic distribution of the principal power, metallic, and other minerals. Economic geographic aspects of modes of exploitation. Consequences of geographic distribution and problems of conservation.

*Geog. 190. Political Geography. (3)*

Geographical factors in national power and international relations; an analysis of the role of "Geopolitics" and "Geostrategy," with special reference to the current world scene.

## GOVERNMENT AND POLITICS

*G. & P. 1. American Government. (3)*

This course is designed as the basic course in government for the American Civilization program, and it or its equivalent is a prerequisite to all other courses in the Department. It is a comprehensive study of governments in the United States—national, state, and local.

*G. & P. 97. Major Foreign Governments. (3)*

Prerequisite, *G. & P. 1*. An examination of characteristic governmental institutions and political processes in selected major powers, such as Britain, Russia, France, Germany, Italy, Japan, and China. Students may not receive credit in this course and also obtain credit in *G. & P. 7, 8, or 10*.

*G. & P. 101. International Political Relations. (3)*

Prerequisite, *G. & P. 1*. A study of the major factors underlying international relations, the influence of geography, climate, nationalism, and imperialism, and the development of foreign policies of the major powers.

*G. & P. 102. International Law. (3)*

Prerequisite, *G. & P. 1*. Fundamental principles governing the relations of states, including matters of jurisdiction over landed territory, water, airspace, and persons; treatment of aliens; treaty-making; diplomacy; and the laws of war and neutrality.

*G. & P. 104. Inter-American Relations. (3)*

Prerequisite, *G. & P. 1*. An analytical and historical study of the Latin-American policies of the United States and of problems in our relations with individual countries, with emphasis on recent developments.

*G. & P. 105. Recent Far Eastern Politics. (3)*

Prerequisite, *G. & P. 1*. The background and interpretation of recent political events in the Far East and their influence on world politics.

*G. & P. 106. American Foreign Relations. (3)*

Prerequisite, *G. & P. 1*. The principles and machinery of the conduct of American foreign relations, with emphasis on the Department of State and the Foreign Service, and an analysis of the major foreign policies of the United States.

G. & P. 108. *International Organization*. (3)

Prerequisite, G. & P. 1. A study of the objectives, structure, functions, and procedures of international organizations, including the United Nations and such functional and regional organizations as the Organization of American States.

G. & P. 110. *Principles of Public Administration*. (3)

Prerequisite, G. & P. 1. A study of public administration in the United States, giving special attention to the principles of organization and management and to fiscal, personnel, planning, and public relations practices.

G. & P. 111. *Public Personnel Administration*. (3)

Prerequisite, G. & P. 110 or B. A. 160. A survey of public personnel administration, including the development of merit civil service, the personnel agency, classification, recruitment, examination techniques, promotion, service ratings, training, discipline, employee relations and retirement.

G. & P. 131, 132. *Constitutional Law*. (3, 3)

Prerequisite, G. & P. 1. A systematic inquiry into the general principles of the American constitutional system, with special reference to the role of the judiciary in the interpretation and enforcement of the federal constitution; the position of the states in the federal system; state and federal powers over commerce; due process of law and other civil rights.

G. & P. 141. *History of Political Theory*. (3)

Prerequisite, G. & P. 1. A survey of the principal political theories set forth in the works of writers from Plato to Bentham.

G. & P. 142. *Recent Political Theory*. (3)

Prerequisite, G. & P. 1. A study of nineteenth and twentieth century political thought, with special emphasis on recent theories of socialism, communism, and fascism.

G. & P. 144. *American Political Theory*. (3)

Prerequisite, G. & P. 1. A study of the development and growth of American political concepts from the colonial period to the present.

G. & P. 154. *Problems of World Politics*. (3)

Prerequisite, G. & P. 1. A study of governmental problems of international scope such as causes of war, problems of neutrality, and propaganda. Students are required to report on readings from current literature.

G. & P. 174. *Political Parties*. (3)

Prerequisite, G. & P. 1. A descriptive and analytical examination of American political parties, nominations, elections, and political leadership.

G. & P. 178. *Public Opinion*. (3)

Prerequisite, G. & P. 1. An examination of public opinion and its effect on political action, with emphasis on opinion formation and measurement, propaganda, and pressure groups.

G. & P. 191. *The Government and Administration of the Soviet Union*. (3)

Prerequisite, G. & P. 1. A study of the adoption of the Communist philosophy by the Soviet Union, of its governmental structure, and of the administration of government policy in the Soviet Union.



*G. & P. 197. Comparative Governmental Institutions. (3)*

Prerequisite, G. & P. 1. A study of major political institutions, such as legislatures, executives, courts, administrative systems, and political parties, in selected foreign governments.

*For Graduates*

*G. & P. 201. Seminar in International Political Organization. (3)*

A study of the forms and functions of various international organizations.

*G. & P. 202. Seminar in International Law. (3)*

Reports on selected topics assigned for individual study and reading in substantive and procedural international law.

*G. & P. 205. Seminar in American Political Institutions. (3)*

Reports on topics assigned for individual study and reading in the background and development of American government.

*G. & P. 206. Seminar in American Foreign Relations. (3)*

Reports on selected topics assigned for individual study and reading in American foreign policy and the conduct of American foreign relations.

*G. & P. 207. Seminar in Comparative Governmental Institutions. (3)*

Reports on selected topics assigned for individual study and reading in governmental and political institutions in governments throughout the world.

*G. & P. 211. Seminar in Federal-State Relations. (3)*

Reports on topics assigned for individual study and reading in the field of recent federal-state relations.

*G. & P. 213. Problems of Public Administration. (3)*

Reports on topics assigned for individual study and reading in the field of public administration.

*G. & P. 221. Seminar in Public Opinion. (3)*

Reports on topics assigned for individual study and reading in the field of public opinion.

*G. & P. 223. Seminar in Legislatures and Legislation. (3)*

Reports on topics assigned for individual study and reading about the composition and organization of legislatures and about the legislative process.

*G. & P. 224. Seminar in Political Parties and Politics. (3)*

Reports on topics assigned for individual study and reading in the fields of political organization and action.

*G. & P. 225. Man and the State. (3)*

Individual reading and reports on such recurring concepts in political theory as liberty, equality, justice, natural law and natural rights, private property, sovereignty, nationalism, and the organic state.



*G. & P. 231. Seminar in Public Law. (3)*

Reports on topics assigned for individual study and reading in the fields of constitutional and administrative law.

*G. & P. 251. Bibliography of Government and Politics. (3)*

Survey of the literature of the various fields of government and politics and instruction in the use of government documents.

*G. & P. 261. Problems of Government and Politics. (3)*

Credit according to work accomplished.

*G. & P. 399. Thesis Research.*

(Arranged).

## HEALTH

In addition to the Health courses listed below consult the College of Physical Education, Recreation and Health catalog for graduate level courses in the Health field.

*Hea. 80. The Driver, His Characteristics and Improvement. (3)*

Prerequisites, Hea. 50, 70. The aim of this study is to treat the driver-behavior problem in its relation to many of the psycho-physical factors and forces in the traffic environment that impinge upon the man behind the wheel.

*For Advanced Undergraduates and Graduates\***Hea. 120. Methods and Materials in Health Education. (3)*

Prerequisites, Hea. 40 or equivalent. This course considers various plans of teaching health in schools. Health education teaching methods and materials are evaluated with regard to their application to practical situations.

*Hea. 145. Advanced Driver Education. (3)*

Prerequisites, Hea. 50, 70, 80, 105. Progressive techniques and practice of advanced driver-education; comprehensive programming for traffic safety; psychology of traffic safety; improving the attitudes of young drivers; teaching to meet driving emergencies; program planning in driver-education; consumer education; resources and agencies; the teacher and driver education; measuring and evaluating results, driver-education for adults; new developments in driver-education; insurance and liability, and the future of driver-education.

*Hea. 160. Problems in School Health Education in Elementary and Secondary Schools. (2-6)*

This is a workshop type course designed particularly for in-service teachers to acquaint them with the best methods of providing good health services, healthful environment and health instruction.

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\*Note: Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

*Hea. 170. The Health Program in the Elementary School. (3)*

Prerequisites, Hea. 2 and 4 or Hea. 40. This course, designed for the elementary school classroom teacher, analyzes biological, sociological, nutritional and other factors which determine the health status and needs of the individual elementary school child. The various aspects of the school program are evaluated in terms of their role in health education.

The total school health program is surveyed from the standpoint of organization and administration, and health appraisal. Emphasis is placed upon modern methods and current materials in health instruction. (The State Department of Education accepts this course for biological science credit.)

*\*Hea. 178. Fundamentals of Sex Education. (3)*

This course is concerned with basic information regarding the physical, psychological, social, historical, and comparative cultural aspects of sex. The adjustment needs and problems of children and adults during the course of maturing and aging are studied, and special consideration is given to the sex education program in schools.

*Hea. 189. Field Laboratory Projects and Workshops. (1-6)*

A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

Note: The maximum total number of credits that may be earned toward any degree in Physical Education, Recreation, or Health Education under P.E. Rec., Hea., or Ed. 189 is six.

## HISTORY

*H. 1, 2. History of Modern Europe. (3, 3)*

The basic course, prerequisite for all advanced courses in European History. A study of European History from the Renaissance to the present day. First semester to 1815. Second semester since 1815.

*H. 5, 6. History of American Civilization. (3, 3)*

Required for graduation of all students who enter the University after 1944-45. Normally to be taken in the sophomore year.

*H. 101. American Colonial History. (3)*

Prerequisites, H. 5, 6, or the equivalent. The settlement and development of colonial America to the middle of the eighteenth century.

*H. 102. The American Revolution. (3)*

Prerequisites, H. 5, 6, or the equivalent. The background and course of the American Revolution through the formation of the Constitution.

*H. 105. Social and Economic History of the United States to 1865. (3)*

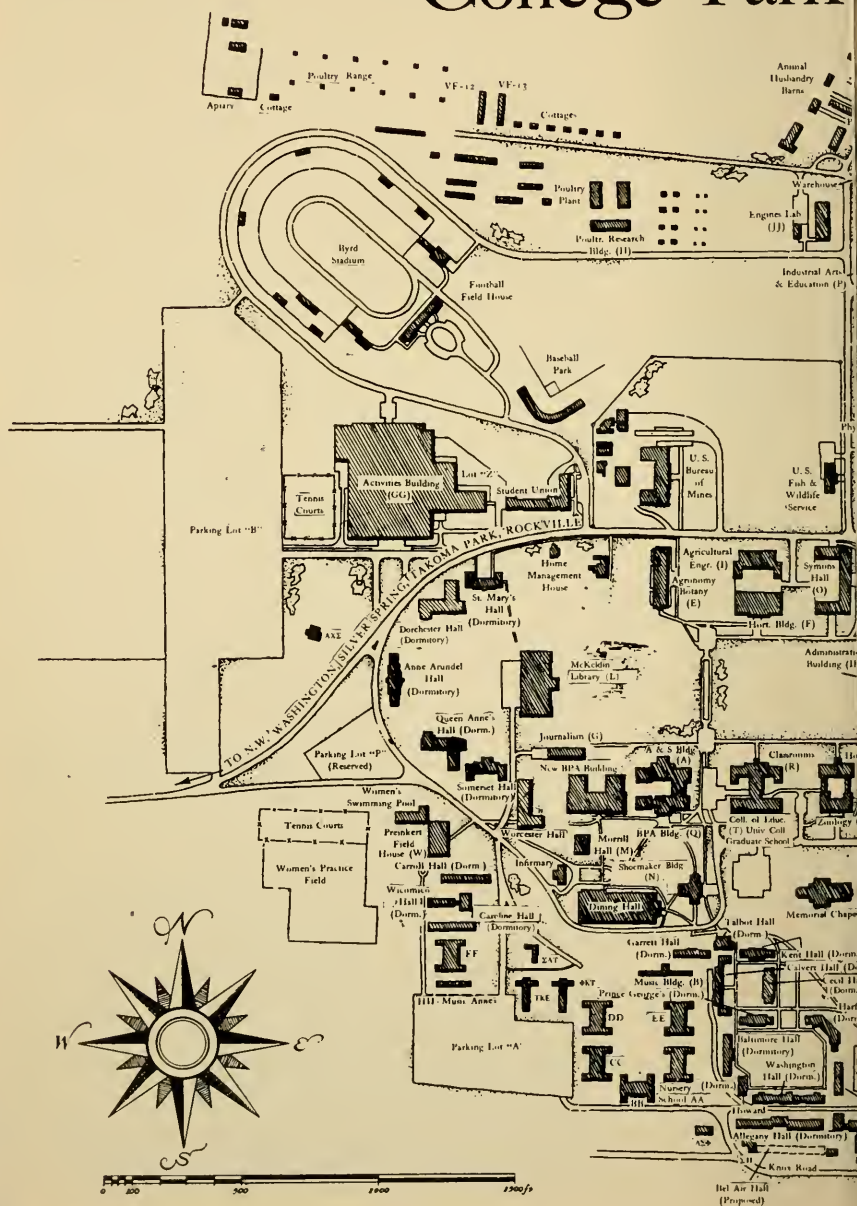
Prerequisites, H. 5, 6, or the equivalent. A synthesis of American life from Independence through the Civil War.



#### HEIDELBERG COMMENCEMENT

*This is a general view of the 1959 graduation exercises in the Neue Aule of the University of Heidelberg, where degrees were announced for 121 students of the University of Maryland Overseas Program, European Division, who completed requirements for their B.S. and B.A. degrees. (STARS AND STRIPES PHOTO).*

# UNIVERSITY OF College Park





# MARYLAND

## mpus



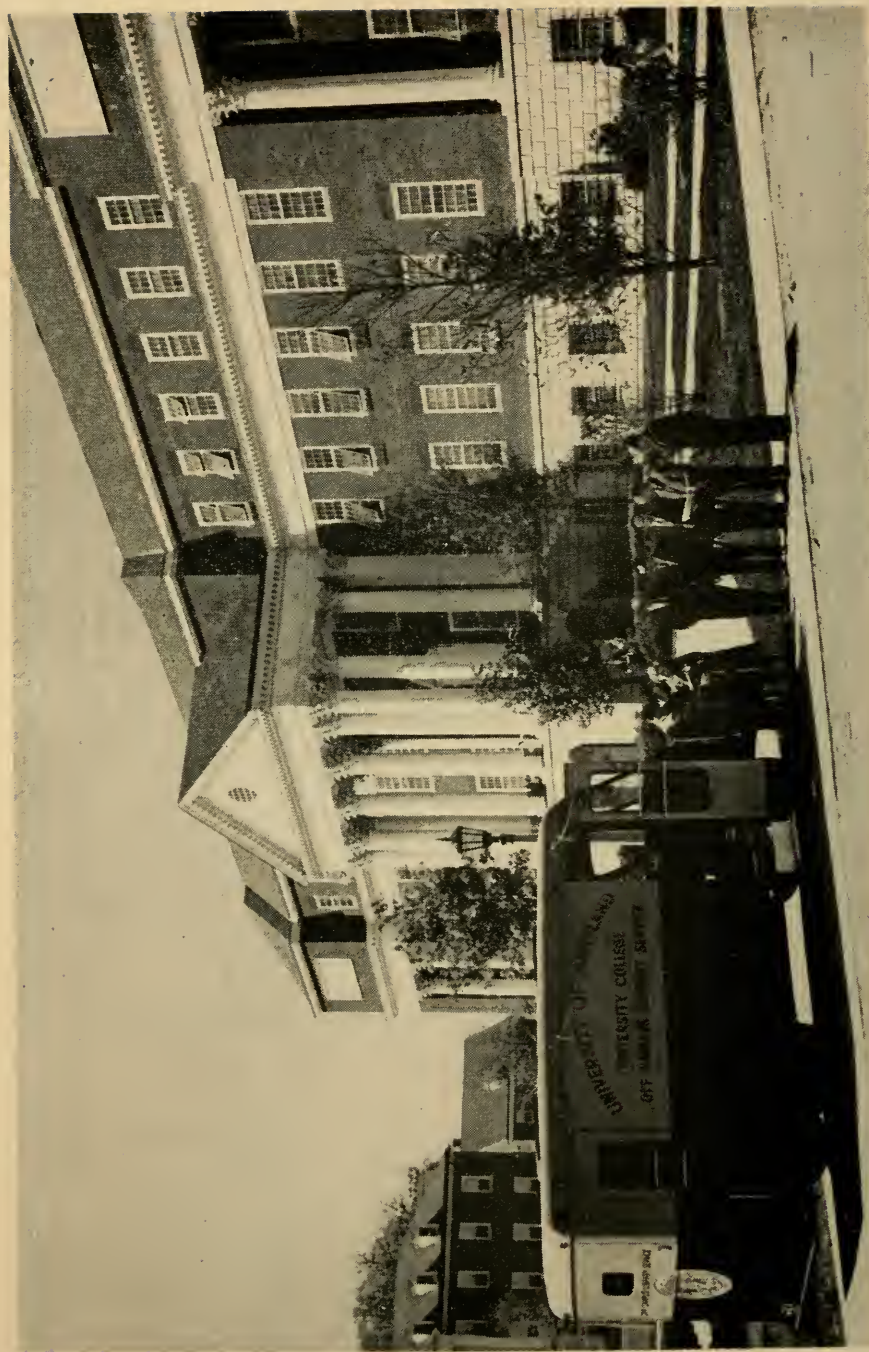
### BUILDING CODE LETTERS FOR CLASS SCHEDULES

|     |                                                    |
|-----|----------------------------------------------------|
| A   | Arts and Sciences—Francis Scott Key Hall           |
| AA  | Nursery School                                     |
| AR  | Armory                                             |
| B   | Music                                              |
| IB  | Administration                                     |
| C   | Chemistry                                          |
| CC  | Psychology                                         |
| Col | Coliseum                                           |
| D   | Dairy—Turner Laboratory                            |
| DD  | Psycho-Pharmacology Laboratory                     |
| E   | Agronomy—Botany—H. J. Patterson Hall               |
| EE  | Counseling Center                                  |
| F   | Horticulture—Holzapfel Hall                        |
| FF  | Temporary Classroom                                |
| G   | Journalism                                         |
| GG  | Cole Student Activities Building                   |
| H   | Home Economics                                     |
| I   | Agricultural Engineering—Shriver Laboratory        |
| II  | Poultry—Jull Hall                                  |
| J   | Engineering Classroom Building                     |
| JJ  | Engines Research Laboratory (Molecular Physics)    |
| K   | Zoology—Silverster Hall                            |
| KK  | North Administration Building                      |
| L   | Library—McKeldin Hall                              |
| M   | Morrill Hall                                       |
| N   | Shoemaker Building                                 |
| O   | Agriculture—Symons Hall                            |
| P   | Industrial Arts and Education—J. M. Patterson Bldg |
| Q   | Business & Public Administration—Taliaferro Hall   |
| R   | Classroom Building—Woods Hall                      |
| S   | Engineering Laboratories                           |
| T   | Education—Skinner Building                         |
| U   | Chemical Engineering                               |
| V   | Wind Tunnel                                        |
| W   | Preprint Field House                               |
| X   | Judging Pavilion                                   |
| Y   | Mathematics                                        |
| Z   | Physics                                            |

Sororities Not Shown  
Alpha Xi Delta

Fraternities Not Shown  
Alpha Epsilon Pi  
Zeta Beta Tau  
Phi Kappa Gamma  
Tau Epsilon Phi





### LIBRARY ON WHEELS

University College's mobile library unit makes library services available to off-campus students in the Washington-Baltimore

*H. 106. Social and Economic History of the United States since the Civil War. (3)*

Prerequisites, H. 5, 6, or the equivalent. The development of American life and institutions, with emphasis upon the period since 1876.

*H. 116. The Civil War. (3)*

Prerequisites, H. 5, 6, or the equivalent. Military aspects; problems of the Confederacy, political, social, and economic effects of the war upon American society.

*H. 118, 119. Recent American History. (3, 3)*

Prerequisites, H. 5, 6, or the equivalent. Party politics, domestic issues, foreign relations of the United States since 1890. First semester, through World War I. Second semester, since World War I.

*H. 127, 128. Diplomatic History of the United States. (3, 3)*

Prerequisites, H. 5, 6, or the equivalent. A historical study of the diplomatic negotiations and foreign relations of the United States. First semester, from the Revolution to the Civil War; second semester, from the Civil War to the present.

*H. 129. The United States and World Affairs. (3)*

Prerequisites, H. 5, 6, or the equivalent. A consideration of the changed position of the United States with reference to the rest of the world since 1917.

*H. 133, 134. The History of Ideas in America. (3, 3)*

Prerequisites, H. 5, 6, or the equivalent. An intellectual history of the American people, embracing such topics as liberty, democracy, and social ideas.

*H. 141, 142. History of Maryland. (3, 3)*

Prerequisites, H. 5, 6, or the equivalent. First semester, a survey of the political, social and economic history of colonial Maryland. Second semester, Maryland's historical development and role as a state in the American Union.

*H. 145, 146. Latin-American History. (3, 3)*

Prerequisites, H. 1 and 2 or H. 5 and 6 or equivalent. A survey of the history of Latin America from colonial origins to the present, covering political, cultural, economic, and social development, with special emphasis upon relations with the United States. First semester, Colonial Latin America. Second semester, the Republics.

*H. 155. Medieval Civilization. (3)*

Prerequisites, H. 1, 2, or H. 53, 54, or the permission of the instructor. A survey of Medieval life, culture, and institutions from the fall of the Roman Empire to the thirteenth century.

*H. 161. The Renaissance and Reformation. (3)*

Prerequisites, H. 1, 2, or 53, 54, or the permission of the instructor. The culture of the Renaissance, the Protestant revolt and Catholic reaction through the Thirty Years War.

*H. 166. The French Revolution. (2)*

The Enlightenment and the Old Regime in France; the revolutionary uprisings from 1789 to 1799.

## History

H. 171, 172. *Europe in the Nineteenth Century, 1815-1919.* (3, 3)

Prerequisites, H. 1, 2, or H. 53, 54. A study of the political, economic, social and cultural development of Europe from the Congress of Vienna to the First World War.

H. 175, 176. *Europe in the World Setting of the Twentieth Century.* (3, 3)

Prerequisites, H. 1, 2, or H. 3, 4. A study of political, economic, and cultural developments in twentieth century Europe with special emphasis on the factors involved in the two World Wars and their global impacts and significance.

H. 185, 186. *History of the British Empire.* (3, 3)

Prerequisites, H. 1, 2, or H. 53, 54. First semester, the development of England's Mercantilist Empire and its fall in the war for American Independence (1783); second semester, the rise of the Second British Empire and the solution of the problem of responsible self-government (1783-1867), the evolution of the British Empire into a Commonwealth of Nations, and the development and problems of the dependent Empire.

H. 191. *History of Russia.* (3)

Prerequisites, H. 1, 2, or the equivalent. A history of Russia from the earliest time to the present day.

H. 192. *Foreign Policy of the USSR.* (3)

Prerequisite, H. 191. A survey of Russian foreign policy in the historical perspective with special emphasis on the period of the USSR. Russian aims, expansion, and conflicts with the western powers in Europe, the Near and Middle East, and the Far East will be studied.

H. 195. *The Far East.* (3)

A survey of the institutional, cultural and political aspects of the history of China and Japan, and a consideration of present-day problems of the Pacific area.

H. 196. *Southeast Asia.* (3)

The political, economic, and cultural history of the new nations of Southeast Asia with emphasis on the colonial period and a view to understanding contemporary developments.

H. 200. *Research.* (1-6)

Credit proportioned to amount of work.

H. 201. *Seminar in American History.* (3)

H. 202. *Historical Literature.* (3)

Assignments in various selected fields of historical literature and bibliography to meet the requirements of qualified graduate students who need more intensive concentration.

H. 216. *Seminar in the American Civil War.* (3)

Readings and conferences on the controversial literature of the Civil War. Attention is focused upon the conflicting interpretations and upon the social and economic impact of the war on American society. Opportunity is also given to read in the rich source material of this period.

*H. 233, 234. Topics in American Intellectual History. (3, 3)*

Readings and conferences on selected phases of American thought, with emphasis on religious traditions, social and political theory, and development of American ideas.

*H. 250. Seminar in European History. (3)*

*H. 282. Problems in the History of World War II. (3)*

Investigation of various aspects of the Second World War, including military operations, diplomatic phases, and political and economic problems of the war and its aftermath.

*H. 287. Historiography. (3)*

Readings and occasional lectures on the historical writing, the evolution of critical standards, the rise of auxiliary sciences, and the works of selected masters.

## JOURNALISM AND PUBLIC RELATIONS

*Jour. 165. Feature Writing. (3)*

Writing and selling of magazine and newspaper feature articles.

*P. R. 166. Public Relations. (3)*

Survey of public relations; general orientation, principles and techniques.

*P. R. 170. Publicity Techniques. (3)*

Strategy and techniques of publicity. Orientation and practice in the use of major media of public communication.

*P. R. 186. Public Relations of Government. (3)*

Study of public relations, publicity, propaganda, information services in public administration.

## LANGUAGES AND LITERATURE, FOREIGN

A student who offers two units of a foreign language from high school will not receive credit in college for the first semester of the introductory course in that language.

### ARABIC

*Arabic 1, 2. Modern Arabic. (3, 3)*

First and second semesters. Three recitations a week. Elements of pronunciation, script, colloquial conversation and translation.

### CHINESE

*Chinese 1, 2. Elementary Chinese. (3, 3)*

Elements of pronunciation, simple ideograms, colloquial conversation, translation.



## Foreign Languages

### *Chinese 4, 5. Intermediate Chinese. (3, 3)*

Prerequisite, Chinese 1 and 2 or equivalent. Reading of texts designed to give some knowledge of Chinese life, thought, and culture.

### *Chinese 161, 162. Chinese Civilization. (3, 3)*

Chinese 161 and 162 may be counted as history credits in meeting major and minor requirements, and, along with Chinese 1 and 2, as meeting the 12-hour language requirement.

## FRENCH

### *French 1, 2. Elementary French. (3, 3)*

Elements of grammar; pronunciation and conversation; exercises in composition and translation.

### *French 4, 5. Intermediate Literary French. (3, 3)*

Prerequisite, French 1 and 2 or equivalent. Reading of texts designed to give some knowledge of French life, thought, and culture.

### *French 8, 9. Intermediate Conversation. (3, 3)*

An elective course in conversation which can be taken after completion of French 5.

## GERMAN

### *German 1, 2. Elementary German. (3, 3)*

Elements of grammar; pronunciation and conversation; exercises in composition and translation.

### *German 4, 5. Intermediate Literary German. (3, 3)*

Prerequisite, German 1, 2, or equivalent. Reading of narrative prose designed to give some knowledge of German life, thought and culture.

### *German 8, 9. Intermediate Conversation. (3, 3)*

An elective course in conversation which can be taken after completion of German 5.

## RUSSIAN

### *Russian 1, 2. Elementary Russian. (3, 3)*

Elements of grammar; pronunciation and conversation; exercises in translation.

### *Russian 3. Elementary Conversation. (1)*

### *Russian 4, 5. Intermediate Russian. (3, 3)*

Prerequisite, Russian 1 and 2, or equivalent. Reading of texts designed to give some knowledge of Russian life, thought and culture.

### *Russian 8. Intermediate Conversation. (2)*

An elective course in conversation which can be taken after completion of Russian 5.



## SPANISH

### *Spanish 1, 2. Elementary Spanish. (3, 3)*

Elements of grammar and exercises in translation. Pronunciation and conversation.

### *Spanish 4, 5. Intermediate Spanish. (3, 3)*

Prerequisite, Spanish 1, 2, or equivalent. Reading of texts designed to give some knowledge of Spanish and Latin-American life, thought and culture.

### *Spanish 8, 9. Intermediate Conversation (3, 3)*

An elective course in conversation which can be taken after completion of Spanish 5.

## MATHEMATICS

In general, students should enroll in only one of the course sequences, Math. 5, 10-11, 18-19. In case this rule is not followed, proper assignment of credit will be made upon application to the Department of Mathematics. The following are listed as typical situations:

Math. 5, 10, 18. Credit in only one course, the one enrolled in latest.

Math. 11, 18. Math. 11—1 credit; Math. 18—5 credits.

### *Math. 5. Business Algebra. (3)*

Prerequisite, one unit of algebra. Open only to students in the College of Business and Public Administration, the College of Agriculture, College of Special and Continuation Studies, and the Department of Industrial Education. Note regulation above in case student enrolls in more than one of the courses, Math. 5, 10, 18. Fundamental operations, fractions, ratio and proportion, linear equations, exponents, logarithms, percentage, trade discount, simple interest, bank discount, true discount, and promissory notes.

### *Math. 6. Mathematics of Finance. (3)*

Prerequisite, Math. 5 or equivalent. Required of students in the College of Business and Public Administration, and open to students in the College of Arts and Sciences only for elective credit. Line diagrams, compound interest, simple interest, ordinary annuities, general annuities, deferred annuities, annuities due, perpetuities, evaluation of bonds, amortization, and sinking funds.

### *Math. 10. Algebra. (3)*

Prerequisite, one unit each of algebra and plane geometry. Open to biological, pre-medical, predental, College of Special and Continuation Studies, and general Arts and Sciences students. Note regulation above, in case student enrolls in more than one of the courses, Math. 5, 10, 18. Fundamental operations, factoring, fractions, linear equations, exponents and radicals, quadratic equations, progressions, logarithms, permutations and combinations, probability and mathematics of investment.

### *Math. 11. Trigonometry and Analytic Geometry. (3)*

Prerequisite, Math. 10 or equivalent. Open to biological, premedical, predental, University College and general Arts and Sciences students. This course is not recom-

mended for students planning to enroll in Math. 20. Note regulation above, in case student enrolls in more than one sequence, Math. 10-11, 18-19. Trigonometric functions, identities, addition formulas, solution of triangles, coordinates, logic problems, the straight line and circle, conic sections, and graphs.

*Math. 18, 19. Elementary Mathematical Analysis. (5, 5)*

Prerequisites, high school algebra completed and plane geometry. Open to students in the sciences, engineering, education. Note regulation above, in case student enrolls in more than one of the course sequences, Math. 5, 10-11, 18-19. The elementary mathematical functions, composed of algebraic, exponential, trigonometric types and their inverses, are studied by means of their properties, their graphical representations, the identities interconnecting them, the solution of equations involving them. The beginning techniques of calculus and a full discussion of solid analytic geometry are included. Other material may be selected from such topics as permutations, combinations, probability, statistics, determinants, vectors, and matrices.

*Math. 20, 21. Calculus. (4, 4)*

Three lectures and two one-hour drill periods a week. Summer School. Prerequisite, Math. 19 or equivalent. Open to students in engineering, education, and the physical sciences. Limits, derivatives, differentials, maxima and minima, curve sketching, rates, curvature, kinematics, integration with geometric and physical applications, partial derivatives, space geometry, multiple integrals, infinite series.

*For Graduates and Advanced Undergraduates*

*Math. 100. Higher Algebra. (3)*

Prerequisite, Math. 21 or equivalent. The algebra of vector spaces and matrices, with emphasis upon those aspects of interest to students in applied mathematics.

*Math. 110, 111. Advanced Calculus. (3, 3)*

Prerequisite, Math. 21, or equivalent. Limits and continuity of real and complex functions, Riemann integration, partial differentiation, line and surface integrals, infinite series, elements of vector analysis and of complex variable theory. Emphasis on problems and techniques.

*Math. 114. Differential Equations. (3)*

Prerequisite, Math. 110 or equivalent. Ordinary differential equations, symbolic methods, successive approximations, solutions in series, orthogonal functions, Bessel functions, Sturmian theory.

*Math. 115. Partial Differential Equations. (3)*

Prerequisite, Math. 114. Partial differential equations of first and second order, characteristics, boundary value problems, systems of equations, applications.

*Math. 116. Introduction to Complex Variable Theory. (3)*

Prerequisite, Math. 21 or equivalent. Open to students of engineering and the physical sciences. Graduate students of mathematics should enroll in Math. 286. Fundamental operations in complex numbers, differentiation and integration, sequences and series, power series, analytic functions, conformal mapping, residue theory, special functions.

*Math. 126, 127. Introduction to Differential Geometry and Tensor Analysis. (3, 3)*

Prerequisite, Math. 21 or equivalent. The differential geometry of curves and surfaces with the use of vector and tensor methods, curvature and torsion, moving frames, curvilinear coordinates, the fundamental differential forms, covariant derivatives, intrinsic geometry, curves on a surface, applications to problems in dynamics, mechanics, electricity, and relativity.

*Math. 130. Probability. (3)*

Prerequisite, Math. 21 or equivalent. Combinatory analysis, total, compound and inverse probability, continuous distributions, theorems of Bernoulli and Laplace, theory of errors.

*Math. 132. Mathematical Statistics. (3)*

Prerequisite, Math. 21 or equivalent. Frequency distributions and their parameters, multivariate analysis and correlation, theory of sampling, analysis of variance, statistical inference.

*Math. 150, 151. Advanced Mathematics for Engineers and Physicists. (3, 3)*

Prerequisite, Math. 21 or equivalent. An introduction to advanced mathematical methods and their application to the technical problems of physics and engineering. Topics include Fourier series, matrices, ordinary and partial differential equations of applied mathematics, numerical methods, Bessel functions, complex variables, operational calculus.

*Math. 152. Vector Analysis. (3)*

Prerequisite, Math. 21 or equivalent. Algebra and calculus of vectors and applications.

*Math. 153. Operational Calculus. (3)*

Prerequisite, Math. 21 or equivalent. Operational solutions of ordinary and partial differential equations, Fourier and Laplace transforms.

*Math. 155. Numerical Analysis. (3)*

Prerequisite, Math. 110 and 114, or consent of instructor. A brief survey of computing machines, study of errors involved in numerical computations, the use of desk machines and tables, numerical solution of polynomial and transcendental equations, interpolation, numerical differentiation and integration, ordinary differential equations, systems of linear equations.

## MICROBIOLOGY

*Microb. 1. General Microbiology. (4)*

Two lecture and two two-hour laboratory periods a week. The physiology, culture and differentiation of bacteria. Fundamental principles of microbiology in relation to man and his environment. Laboratory fee, \$10.00.

*Microb. 101. Pathogenic Microbiology. (4)*

Two lectures and two laboratory periods a week. The role of microorganisms in the diseases of man and animals with emphasis upon the differentiation and culture of

## *Microbiology, Military Studies*

bacterial species, types of diseases, modes of disease transmission; prophylactic, therapeutic and epidemiological aspects. Laboratory fee, \$10.00.

### *Microb. 108. Epidemiology and Public Health. (2)*

Two lecture periods a week. Prerequisite, Microb. 1. History, characteristic features, and epidemiology of the important communicable diseases; public health aspects of man's struggle for existence; public health administration and responsibilities; vital statistics.

### *Microb. 202. Genetics of Microorganisms. (2)*

Two lecture periods a week. Prerequisite, consent of instructor. An introduction to genetic principles and methodology applicable to microorganisms.

### *Microb. 206, 208. Special Topics. (1, 1)*

Prerequisite, 20 credits in microbiology. Presentation and discussion of fundamental problems and special subjects in the field of microbiology.

### *Microb. 210. Virology and Tissue Culture. (2)*

Two lecture periods a week. Prerequisite, Microb. 101 or equivalent. Characteristics and general properties of viruses and rickettsiae. The principles of tissue culture.

### *Microb. 211. Virology and Tissue Culture Laboratory. (2)*

Two three-hour laboratory periods a week. Prerequisite, Microb. 101 or equivalent. Registration only upon consent of instructor. Laboratory methods in virology and tissue culture. Laboratory fee, \$20.00.

## MILITARY STUDIES

### *M. S. 147, 148. Military History. (3, 3)*

A study of the evolution of the art of war to include the following:

- (1) the impact of technological advances on the conduct of war;
- (2) the development of the principles of strategy and higher tactics;
- (3) the interrelationship of land, sea, and air power and the organization and functioning of high commands in combined operations;
- (4) the attributes of the great military leaders and their contribution to the advancement of the art of war.

### *M. S. 149. Military Law. (3)*

A study of the basic principles of civil and criminal law that are applicable to the military profession; the applicable provisions of the Constitution; and the legal principles affecting military government.

### *M. S. 151. Military Logistics. (3)*

A study of logistics, including (a) the principles governing the national economic activities and resources necessary to support the armed forces; (b) a study of the principles and fundamentals of the elements of military logistics, including supply, maintenance, transportation, hospitalization and evacuation, construction and logistics planning; and (c) research by the student on a selected phase of logistics.



*M. S. 152. Military Leadership. (3)*

A study of the basic requisites, principles and attributes of good military leadership, including both the practical and psychological approaches to the subject. Individual differences in human behavior and the personal element in successful leadership are stressed.

*M. S. 153. Military Policy of the United States. (3)*

A study of our military history and our military concepts and policies, and their effects upon national objectives and national policies. A continuing analysis of all the factors which influence national policies, particularly military policy; an evaluation of the lessons to be learned from this historical study.

## MUSIC

*Music 7, 8. Theory of Music. (3, 3)*

Two lectures and three laboratory hours per week. A fundamental course in the elements of music. Study of rhythms, scales, chord structures, and tonalities through ear training, sight singing, and keyboard drill. The student must achieve a grade of "C" in Music 8 in order to register for Music 17 and 70.

*Music 16. Music Fundamentals for the Classroom Teacher. (3)*

Open to students majoring in Elementary Education or Childhood Education; other students take Music 7. Music 7 and 16 may not both be counted for credit. The fundamentals of music theory and practice, related to the needs of the classroom and kindergarten teacher, and organized in accord with the six-area concept of musical learning.

*Music 20. Survey of Music Literature. (3)*

This course may be taken by students who qualify to select courses within Elective Group II of the American Civilization Program. A study of the principles upon which music is based, and an introduction to the musical repertoires performed in America today.

## NURSING

*Nurs. 9. Nursing in Child Health. (2)*

This course is designed to help the student gain an understanding and appreciation of the health needs of the child in relation to his physical, mental, emotional, and social development.

*Nurs. 108. Applied Psychology. (2)*

This educational experience is designed to supplement and implement nurses' basic knowledge of psychology and sociology. Through lectures, discussions, and observations focused on patient and nurse behavior, nurses can become more aware of the importance of, and can be helped to develop, positive nurse-patient relationships.

*Nurs. 153. Public Health. (2)*

Designed to assist the student in the application of her knowledge in caring for patients and their families in the community. Eight weeks field experience with the Baltimore City Health Department is included.



## *Nursing, Nutrition, Philosophy*

### *Nurs. 154. Principles in Management in a Nursing Unit. (2)*

This course considers the elementary principles of administration; and the interrelationships of the various departments of a health agency. It deals with the position of the supervisor, staff nurse and other members of the nursing team. Methods of supervision and evaluation of clinical work are included.

### *Nurs. 156. Public Health Nursing I. (2)*

The development and current trends of public health nursing are considered in this course. Principles, objectives and methods of public health nursing are incorporated.

### *Nurs. 157. Public Health Nursing II. (4)*

Designed to assist students in the application of knowledge and skills in caring for patients and their families in the community. Thirteen weeks clinical experience is offered through the facilities of the city and state health departments. Eight weeks clinical experience offered to graduate nurse students.

### *Nurs. 158. Bio-statistics. (3)*

Purpose is to orient the student in the proper interpretation of observational data, and to evaluate quantitative aspects of medical literature.

### *Nurs. 159. Clinical Practicum. (2)*

Course provides opportunity for the graduate professional nurse to apply her knowledge, understanding and skills in the nursing care of selected patients. Registration and area of clinical assignment upon the advice of the adviser.

### *Nurs. 199. Pro-seminar. (2)*

Integration of scope and trends in nursing as compared with theoretical and practical applications. (For graduate nurse students).

### *Nurs. 201. Trends of Higher Education in Nursing. (2)*

One lecture or two hour conferences a week.

## NUTRITION

### *Nutrition 114. Nutrition for Health Services. (3)*

Laboratory fee, \$3.00. A scientific study of nutritional status and the effect of food habits on family health. Nutritional requirements for individuals in different stages of development. Techniques and procedures for the application of nutrition knowledge with consideration of various economic levels and social backgrounds.

## PHILOSOPHY

### *Phil. 1. Philosophy for Modern Man. (3)*

Modern man's quest for understanding of himself and his world, with particular reference to American ideas and ideals.

### *Phil. 120. Oriental Philosophy. (3)*

A brief survey of Indian and Chinese philosophy. Discussion of Indian thought will center about the Rig-Veda, the Upanishads, the Buddhist philosophers and the chief Hindu systems. Discussion of Chinese thought will center about Confucius, Lao-tse

and their disciples, particular attention being given to the development of democratic ideals from Mencius to Sun Yat-sen.

*Phil. 123, 124. Philosophies Men Live By. (3, 3)*

An exploration of the fundamental beliefs which determine what men make of their lives and of the world they live in. Each semester classic statements of these beliefs by great philosophers will be chosen for class discussion on the basis of their significance for the problems confronting modern man.

*Phil. 125. The Great Philosophers. (3)*

A discussion of the ideas of the great Western philosophers, based on readings in their works.

*Phil. 130. The Conflict of Ideals in Western Civilization. (3)*

A critical and constructive philosophical examination of the assumptions, goals, and methods of contemporary democracy, fascism, socialism, and communism, with special attention to the ideological conflict between the United States and Russia.

## PHYSICAL EDUCATION

### *For Advanced Undergraduates*

*P. E. 120. Physical Education for the Elementary School. (3)*

This course is designed to orient the general elementary school classroom teacher to physical education. Principles and practices in elementary school physical education are presented and discussed, and a large variety of appropriate activities are considered and demonstrated from a standpoint of their use and application at the various grade levels.

*P. E. 130. Fundamentals of Body Dynamics. (3)*

This course is designed to acquaint the elementary teacher with the scientific principles applied to fundamental motor skills, posture and body mechanics as they relate to physical growth and development.

*\*P. E. 155. Physical Fitness of the Individual. (3)*

A study of the major physical fitness problems confronting the adult in modern society. Consideration is given to the scientific appraisal, development and maintenance of fitness at all age levels. Such problems as obesity, weight reduction, chronic fatigue, posture, and special exercise programs are explored. This course is also open to persons outside the fields of physical education and health.

*\*P. E. 160. Theory of Exercise. (3)*

Two lectures and one laboratory hour a week. Prerequisite, Zool. 1, 14, and 15, and P. E. 100 or the equivalent. A study of exercise and its physiological and kinesiological bases. Special emphasis is placed upon the application of exercise to the development and maintenance of physical efficiency. Corrective therapy, conditioning for athletics, the effects of exercise and training on the human organism, fatigue, staleness, relaxation, and the nature of athletic injuries are investigated.

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\*Note: Starred courses may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

## *Physical Education*

### *P. E. 195. Organization and Administration of Elementary School Physical Education. (3)*

Prerequisite, P. E. 120. This course considers the procedures which are basic to the satisfactory organization of all phases of the elementary school physical education program. Stress will be placed on the organizational and administrative factors necessary for the successful operation of the program in various types of elementary schools. Strong emphasis will be placed on organization and administration from a standpoint of adapting the program to specific situations.

### *P. E. 196. Quantitative Methods. (3)*

A course covering the statistical techniques most frequently used in research pertaining to physical education, recreation, and health education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques.

## *For Graduates*

### *P. E. 200. Seminar in Physical Education, Recreation, and Health. (1)*

### *P. E. 201. Foundations in Physical Education, Recreation, and Health. (3)*

A study of history, philosophy and principles of physical education, recreation and health as applied to current problems in each area and as related to general education.

### *P. E. 203. Supervisory Techniques in Physical Education, Recreation and Health. (3)*

First and second semesters and summer. A study of current concepts, principles and techniques of supervision and of their application to the special fields indicated; observation of available supervisory programs and visits with local supervisors; practice in the use of selected techniques.

### *P. E. 204. Physical Education and the Development of the Child. (3)*

First and second semesters and summer. An analysis of the place of physical education in meeting the growth and developmental needs of children of elementary school age.

### *P. E. 205. Analysis of Contemporary Athletics. (3)*

First and second semesters and summer. A study of current problems, practices, and national issues of paramount importance to the conduct of athletic competition in a democracy.

### *P. E. 210. Methods and Techniques of Research. (3)*

First and second semesters and summer. A study of methods and techniques of research used in Physical Education, Recreation, and Health Education; an analysis of examples of their use; and practice in their application to problems of interest to the student.

### *P. E. 215. Principles and Techniques of Evaluation. (3)*

First and second semesters and summer. Prerequisite, an introductory course in measurement or permission of the instructor. A study of currently used means of evaluating the performance of students and the effectiveness of programs of physical

education in schools and colleges. Specific problems concerning evaluation, brought in by members of the class, will be analyzed.

*P. E. 250. Mental and Emotional Aspects of Sports and Recreation. (3)*  
Prerequisites, Psych. 1, or H. D. Ed. 100, 101, or equivalents. An exploration of psychological aspects of physical education, athletic sports and recreation. Applications of psychology are made to teaching and learning, coaching, athletic efficiency (motivation, emotional upset, staleness, etc.), and the problem of interpreting physical education and recreation experiences. Means of studying problems of these kinds are evaluated.

*P. E. 290. Administrative Direction of Physical Education, Recreation, and Health. (3)*

This is essentially a problem course in which administrative policies and techniques are analyzed in the light of sound educational practice. Opportunities are provided for students to concentrate their efforts upon their own on-the-job administrative problems.

*P. E. 291. Curriculum Construction in Physical Education and Health. (3)*

A study of the principles underlying curriculum construction in Physical Education and Health Education and the practical application of these principles to the construction of a curriculum for a specific situation. The specific content of this course is adjusted to meet the needs of the students enrolled in it.

## PHYSICS

*Phys. 1. Elements of Physics: Mechanics, Heat, and Sound. (3)*

Two lectures, and one recitation a week. The first half of a survey course in general physics. *This course is for the general student and does not satisfy the requirement of the professional schools.* Successful passing prerequisite of the qualifying examination is elementary mathematics. Lecture demonstration fee, \$3.00.

*Phys. 2. Elements of Physics: Magnetism, Electricity, and Optics. (3)*

The second half of a survey course in general physics. *This course is for the general student and does not satisfy the requirements of the professional schools.* Prerequisite, Phys. 1. Lecture demonstration fee, \$3.00.

*Phys. 102. Optics. (3)*

Three lectures a week. Prerequisites, Phys. 11 or 21 and Math. 21.

*Phys. 104, 105. Electricity and Magnetism. (3, 3)*

Prerequisites, Phys. 11 or 21 and Math. 21.

*Phys. 106, 107. Theoretical Mechanics. (3, 3)*

Prerequisites, Phys. 51 or consent of instructor.

*Phys. 108. Physics of Electron Tubes. (3)*

Three lectures a week. Prerequisite, Phys. 104. Must be taken previously or concurrently.

## Physics

*Phys. 109. Electronic Circuits. (4)*

Four lectures a week. Prerequisite, Phys. 105 must be taken previously or concurrently.

*Phys. 114, 115. Introduction to Biophysics. (2, 2)*

Two lectures a week. Prerequisites, intermediate Physics and Calculus.

*Phys. 116, 117. Fundamental Hydrodynamics. (3, 3)*

Three lectures a week. Prerequisites, Phys. 107 and Math. 21.

*Phys. 118. Introduction to Modern Physics. (3)*

Three lectures a week. Prerequisite, Math. 21 and Phys. 11 or 21.

*Phys. 119. Modern Physics. (3)*

Prerequisite, Phys. 118.

*Phys. 120. Nuclear Physics. (4)*

Prerequisite, Phys. 118, or equivalent.

*Phys. 121. Neutron Physics and Fission Reactors. (4)*

Four lectures a week. Prerequisite, Phys. 120.

*Phys. 122. Properties of Matter. (4)*

Four lectures per week. Prerequisite, Phys. 118 or equivalent.

*Phys. 126. Kinetic Theory of Gases. (3)*

Prerequisites, Phys. 107 and Math. 21, or equivalent.

*Phys. 200, 201. Introduction to Theoretical Physics. (6, 6)*

Primarily for students planning to do graduate work. Prerequisite, advanced standing in physics and mathematics.

*Phys. 208. Thermodynamics. (3)*

Prerequisite, Phys. 201, or equivalent.

*Phys. 210. Statistical Mechanics. (3)*

Prerequisites, Phys. 112 and 201.

*Phys. 212, 213. Introduction to Quantum Mechanics. (4, 4)*

Prerequisite, Phys. 201.

*Phys. 222, 223. Boundary-Value Problems of Theoretical Physics. (2, 2)*

Prerequisite, Phys. 201.

*Phys. 230. Seminar. (1)*

Seminars on various topics in advanced physics are held each semester, with the contents varied each year. One semester hour of credit for each seminar each semester.

*Phys. 234, 235. Theoretical Nuclear Physics. (3, 3)*

Prerequisite, Phys. 213.



*Phys. 237. Relativistic Quantum Mechanics. (3)*

Three lectures per week. Prerequisite, Phys. 213.

*Phys. 238. Quantum Theory—selected topics. (3)*

Prerequisites, Phys. 212 and 236.

*Phys. 240, 241. Theory of Sound and Vibrations. (3, 3)*

Prerequisite, Phys. 201.

*Phys. 242, 243. Theory of Solids. (2, 2)*

Prerequisite, Phys. 213.

*Phys. 248, 249. Special Topics in Modern Physics. (2, 2)*

Two lectures per week. Prerequisite, calculus and consent of instructor.

*Phys. 399. Research.*

(Credit according to work done.) Laboratory fee, \$10.00 per credit hour. Prerequisite, approved application for admission to candidacy or special permission of the Physics Department.

## PSYCHOLOGY

*Psych. 1. Introduction to Psychology. (3)*

A basic introductory course intended to bring the student into contact with the major problems confronting psychology and the more important attempts at their solution.

*Psych. 2. Applied Psychology. (3)*

Prerequisite, Psych. 1. Application of research methods to basic human problems in business and industry, in the professions, and in other practical concerns of everyday life.

*Psych. 5. Mental Hygiene. (3)*

Prerequisite, Psych. 1. Introduces the student to the psychology of human personality and adjustment with a view toward increasing self-understanding and developing an appreciation of the mental health movement and each individual's stake in it.

*Psych. 21. Social Psychology. (3)*

Prerequisite, Psych. 1. Psychological study of human behavior in social situations; influence of others on individual behavior, social conflict and individual adjustment, communication and its influences on normal social activity.

*Psych. 106. Statistical Methods in Psychology. (3)*

Prerequisites, Psych. 1, and Math. 1, 5 or 10, or equivalent. A basic introduction to quantitative methods used in psychological research; measures of central tendency, of spread, and of correlation. Majors in Psychology must take this course in the junior year.

*Psych. 110. Educational Psychology. (3)*

Prerequisite, Psych. 1. Researches on fundamental psychological problems encountered in education; measurement and significance of individual differences, learning, motivation, transfer of training.

*Psych. 131. Abnormal Psychology. (3)*

Prerequisites, three courses in Psychology. The nature, diagnosis, etiology, and treatment of mental disorders.

*Psych. 161. Industrial Psychology. (3)*

Prerequisite, Psych. 1. A survey course, intended for those who plan to enter some phase of personnel work, but who do not plan to undertake graduate study.

## RECREATION

In addition to the Recreation courses listed below consult the College of Physical Education, Recreation and Health catalog of graduate level courses in the Recreation field.

### *For Advanced Undergraduates and Graduates\**

*\*Rec. 180. Leadership Techniques and Practices. (3)*

A study of the various kinds of levels of leadership exerted by professional and semi-professional workers, some of the difficulties and probable weaknesses to be met, and some of the tangible techniques to be used in personnel, staff, and public relationships; handling of problem children, of personnel, of public relations campaigns, committee gatherings, etc. The group work approach will be emphasized and used, insofar as possible, in the solution of particular problems that grow out of practical experiences in handling on and off campus groups.

### *For Graduates*

*Rec. 288. Special Problems in Physical Education, Recreation and Health. (1-6)*

Master or Doctoral candidates who desire to pursue special research problems under the direction of their advisers may register for 1-6 hours of credit under this number.

## SOCIOLOGY

Sociology 1 or Sociology 2 is a prerequisite for all more advanced Sociology courses.

*Soc. 1. Sociology of American Life. (3)*

Sociological analysis of the American social structure; metropolitan, small town, and rural communities; population distribution, composition and change; social organization.

*Soc. 2. Principles of Sociology. (3)*

The basic forms of human association and interaction; social processes; institutions; culture; human nature and personality.

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\* Note: Starred courses may be taken for graduate credit with permission of the adviser. Students taking 100 level courses will be expected to carry out a special project.

*Soc. 52. Criminology. (3)*

Criminal behavior and the methods of its study; causation; topologies of criminal acts and offenders; punishment, correction, and incapacitation; prevention of crime.

*Soc. 64. Courtship and Marriage. (3)*

A sociological study of courtship and marriage including considerations of physiological and psychological factors. Inter-cultural comparisons and practical considerations. Designed primarily for students in the lower division.

*Soc. 105. Cultural Anthropology. (3)*

A survey of the simpler cultures of the world with attention to historical processes and the application of anthropological theory to the modern situation.

*Soc. 114. The City. (3)*

The rise of urban civilization and metropolitan regions; ecological process and structure; the city as a center of dominance; social problems, control, and planning.

*Soc. 115. Industrial Sociology. (3)*

The sociology of human relations in American industry and business. Complex industrial and business organizations as social systems. Social relationships within and between industry, business, community, and society.

*Soc. 116. Military Sociology. (3)*

The sociology of military life. Social change and the growth of military institutions. Complex formal military organizations. Military organizations as social systems. Military Service as an occupation or profession. Career patterns, problems and satisfactions. Relations between military institutions, civilian communities and society.

*Soc. 118. Community Organization. (3)*

Community organization and its relation to social welfare; analysis of community needs and resources; health, housing, recreation; community centers; neighborhood projects.

*Soc. 121. Population. (3)*

Population distribution and growth in the United States and the world; population problems and policies.

*Soc. 123. Ethnic Minorities. (3)*

Basic social processes in the relations of ethnic groups within the state; immigration groups and the Negro in the United States; ethnic minorities in Europe.

*Soc. 131. Introduction to Social Service. (3)*

General survey of the field of social-welfare activities; historical development, growth, functions and specialization of agencies and services, private and public.

*Soc. 141. Sociology of Personality. (3)*

Development of human nature and personality in contemporary social life; processes of socialization; attitudes, individual differences, and social behavior.

*Soc. 144. Collective Behavior. (3)*

Social interaction in mass behavior; communication processes; structure and functioning of crowds, strikes, audiences, mass movements, and the public.

*Soc. 145. Social Control. (3)*

Forms, mechanisms, and techniques of group influence on human behavior; problems of social control in contemporary society.

*Soc. 153. Juvenile Delinquency. (3)*

Juvenile delinquency in relation to the general problem of crime; analysis of factors underlying juvenile delinquency; treatment and prevention.

*Soc. 154. Crime and Delinquency Prevention. (3)*

Mobilization of community resources for the prevention of crime and delinquency; area programs and projects.

*Soc. 164. The Family and Society. (3)*

Study of the family as a social institution; its biological and cultural foundations, historic development, changing structure and function; the interactions of marriage and parenthood, disorganizing and reorganizing factors in present-day trends. Open to upper division students.

*Soc. 171. Family and Child Welfare. (3)*

Programs of family and child welfare agencies; social services to families and children; child placement, foster families.

*Soc. 183. Social Statistics. (3)*

Measures of central tendency and dispersion, use of statistical inference in simple testing of null hypotheses, chi square, and labor saving computational devices for correlation.

*Soc. 186. Sociological Theory. (3)*

Development of the science of sociology; historical backgrounds; recent theories of society.

*Soc. 201. Methods of Social Research. (3)*

Selection and formulation of research projects; methods and techniques of sociological investigation and analysis. Required of graduate majors in sociology.

*Soc. 221. Population and Society. (3)*

Selected problems in the field of population; quantitative and qualitative aspects; American and world problems.

*Soc. 224. Race and Culture. (3)*

Race and culture in contemporary society; mobility and the social effects of race and culture contacts and intermixture.

*Soc. 255. Seminar: Juvenile Delinquency. (3)*

Selected problems in the field of juvenile delinquency.

*Soc. 256. Crime and Delinquency as a Community Problem. (3)*

An intensive study of selected problems in adult crime and juvenile delinquency in Maryland.

*Soc. 262. Family Studies. (3)*

Case studies of family situations; statistical studies of family trends; methods of investigation and analysis.

*Soc. 290. Research in Sociology. (Credit to be determined)**Soc. 291. Special Social Problems. (Credit to be determined)*

Individual research on selected problems.

## SPEECH AND DRAMATIC ART

*Speech 4. Voice and Diction. (3)*

Emphasis upon the improvement of voice, articulation, and phonation. May be taken concurrently with Speech 1, 2.

*Speech 10. Group Discussion. (2)*

A study of the principles, methods and types of discussion and their application in the discussion of contemporary problems.

*Speech 103, 104. Speech Composition and Rhetoric. (3, 3)*

A study of rhetorical principles and studies of speech composition in conjunction with the preparation and presentation of specific forms of public address. Speech 103 is prerequisite to Speech 104.

*Speech 105. Speech-Handicapped School Children. (3)*

Admission by consent of instructor. The occurrence, identification and treatment of speech handicaps in the classroom. An introduction to speech pathology.

*Speech 106. Clinical Practice (1 to 5 credits, up to 9).*

Prerequisite Speech 105. Clinical practice in various methods of corrective procedures with various types of speech cases in the University clinic, veterans hospitals, and the public schools. May be taken for 1-5 credit hours per semester. May be repeated for a total of 9 semester hours credit. Laboratory fee, \$1.00 per hour.

*Speech 109. Speech and Language Development of Children. (3)*

An analysis of normal and abnormal processes of speech and language development in children.

*Speech 112. Phonetics. (3)*

Training in the recognition and production of the sounds of spoken English, with an analysis of their formation. Practice in transcription. Mastery of the international phonetic alphabet. Laboratory fee, \$3.00.

*Speech 120. Speech Pathology. (3)*

Prerequisite, Speech 105. A continuation of Speech 105, with emphasis on the causes and treatment of organic speech disorders. Laboratory fee, \$3.00.

*Speech 126. Semantic Aspects of Speech in Human Relations. (3)*

An analysis of speech and language habits from the standpoint of General Semantics.



## *Speech*

### *Speech 133. Communication Processes in Conferences. (3)*

Limited to students in the Department of Air Science. Prerequisite, Speech 104.

### *Speech 136. Principles of Speech Therapy. (3)*

Prerequisite, Speech 120. Differential diagnosis of speech and language handicaps and the application of psychological principles of learning, motivation and adjustment in the treatment of speech disorders. Laboratory fee, \$3.00.

### *Speech 201. Special Problems Seminar (A through K). (1-3)*

(6 hours applicable toward M.A. degree.) A. Stuttering; B. Cleft Palate; C. Delayed Speech; D. Articulation; E. Cerebral Palsy; F. Voice; G. Special Problems of the Deaf; H. Foreign Dialect; I. Speech Intelligibility; J. Neurophysiology of Hearing; K. Minor Research Problems.

### *Speech 210. Anatomy and Physiology of Speech and Hearing. (3)*

A study of the anatomy and physiology of the auditory and speech mechanisms. Laboratory fee, \$3.00.

## THE FACULTY

### *Instructional Staff, All Centers*

ALFRED H. AITKEN, *Lecturer in Physics*

B.A., Lehigh University, 1949; M.S., Indiana University, 1950; PH.D., 1955.

ALBERT L. ALFORD, *Assistant Professor of Government and Politics*

A.B., University of Akron, 1948; A.M., Princeton University, 1951; PH.D., 1953.

HARRY CLAY ALLEN, JR., *Lecturer in Physics*

B.S., Northeastern University, 1948; SC.M., Brown University, 1949; PH.D., University of Washington, 1951.

ROBERT L. ALLEN, *Lecturer in Economics*

B.A., University of Redlands, 1947; M.A., Harvard University, 1950; PH.D., 1953.

WALLACE L. AMUNDSON, *Lecturer in Education*

B.A., University of Maryland, 1957.

MALTHON M. ANAPOL, *Instructor in Speech*

B.S., Rutgers University, 1949; M.A., Temple University, 1953.

DELMAR C. ANDERSON, *Lecturer in Speech*.

FRANK G. ANDERSON, *Assistant Professor of Sociology*

A.B., Cornell University, 1941; PH.D., University of New Mexico, 1951.

NANCY P. ANDERSON, *Instructor in Psychiatric Nursing*

B.S., University of Maryland, 1954; M.S., 1957.

RALPH R. ANDERSON, *Lecturer in Foreign Languages*

B.S., University of Missouri, 1947; M.A., University of Illinois, 1949; PH.D., Ohio State University, 1958.

MARY L. ANDREWS, *Assistant Professor of English*

B.S., New York University, 1929; M.A., 1935; PH.D., 1941.

PHILIP E. ARSENAULT, *Instructor in Foreign Languages*

B.A., Clark University, 1935; M.ED., 1937; M.A., Princeton University, 1950.

JOHN P. AUGELLI, *Associate Professor of Geography*

B.A., Clark University, 1943; M.A., Harvard University, 1949; PH.D., 1951.

FRANK P. AVONDA, *Assistant Professor of Chemistry*

B.S., The College of the City of New York, 1948; A.M., Columbia University, 1949; PH.D., The Ohio State University, 1953.

THOMAS J. AYLWARD, *Instructor in Speech*

B.S., University of Wisconsin, 1947; M.S., 1949.

EUGENE H. BACON, *Lecturer in History*

A.B., Loyola College, 1947; M.A., Georgetown University, 1949; PH.D., 1951.

## Faculty

J. DOUGLAS BAIRD, *Lecturer in English (Europe)*

B.A., University of British Columbia, 1924; S.A., 1925; PH.D., University of Washington, 1952.

ROSCOE BAKER, *Lecturer in Government and Politics (Europe)*

A.B., Berea College, 1929; A.M., Ohio State University, 1933; PH.D., Northwestern University, 1950.

JAGJIT S. BAKSHI, *Assistant Instructor in Mathematics*

BACCALAUREATE A.S., College Khanna, 1952; M.A., Government College Ludhvari, 1955.

CECIL R. BALL, *Associate Professor of English*

B.A., College of William and Mary, 1923; M.A., University of Maryland, 1934; PH.D., Johns Hopkins University, 1955.

HARRY BARD, *Lecturer in Education*

B.S., Johns Hopkins University, 1929; M.A., Columbia University, 1938; ED.D., University of Maryland, 1951.

JACK C. BARNES, *Assistant Professor of English*

A.B., Duke University, 1939; M.A., 1947.

CHARLES E. BARRETT, *Instructor in Economics*

A.B., Loyola College, 1942; M.A., University of Maryland, 1950.

HOWARD S. BASS, JR., *Lecturer in Business Administration*

B.S., Virginia Military Institute, 1951; M.B.A., Harvard University, 1957.

EDMOND W. BASTEK, *Lecturer in Military Studies*

B.S., University of Maryland, 1949; M.B.A., 1955.

WHITNEY K. BATES, *Instructor in History*

A.B., University of Washington, 1941; M.A., University of Wisconsin, 1948; PH.D., 1952.

GEORGE F. BATKA, *Assistant Professor of Speech*

A.B., University of Wichita, 1938; M.A., University of Michigan, 1941.

JOSEPHINE BAUER, *Lecturer in English (Europe)*

A.B., Washington University, 1930; M.A., 1931; PH.D., University of London.

RICHARD H. BAUER, *Associate Professor of History*

PH.B., University of Chicago, 1924; M.A., 1928; PH.D., 1935.

RONALD H. BAYES, *Lecturer in English (Atlantic)*

B.S., Eastern Oregon College, 1955; M.S., 1956.

EUGENE H. BEACH, *Lecturer in Electrical Engineering*

B.S.E., University of Michigan, 1941; M.S., 1947; PH.D., 1953.

OTHO T. BEALL, JR., *Assistant Professor of English*

B.A., Williams College, 1930; M.A., University of Minnesota, 1933; PH.D., University of Pennsylvania, 1953.

- EARL S. BEARD, *Assistant Professor of History*  
B.A., Baylor University, 1948; M.A., State University of Iowa, 1950; PH.D., 1953.
- WILLIAM R. BELMONT, *Lecturer in Economics*  
B.A., DePaul University, 1952; M.A., George Washington University, 1954; PH.D., 1958.
- LAWRENCE H. BENNETT, *Lecturer in Physics*  
B.A., Cum Laude, 1951; M.S., University of Maryland, 1955; PH.D., Rutgers, The State University, 1958.
- LYNN B. BENNION, *Lecturer in English (Far East)*  
B.A., University of Utah, 1942; PH.D., Johns Hopkins University, 1946.
- IVAN BENSON, *Lecturer in English (Far East)*  
B.A., Colgate University, 1920; M.A., University of Kansas, 1928; PH.D., University of South Carolina, 1937.
- JOSEPH C. BERNARDO, *Lecturer in Military Studies*  
B.S., St. John's University, 1938; M.A., Fordham University, 1940; PH.D., Georgetown University, 1950.
- BARRY BERNSTEIN, *Lecturer in Mathematics*  
B.S., City College of New York, 1951; M.S., Indiana University, 1954; PH.D., 1956.
- ALFRED J. BINGHAM, *Associate Professor of Foreign Languages*  
B.A., Yale University, 1933; PH.D., Columbia University, 1939.
- JOSIAH A. BLACKLOCK, *Lecturer in Education*  
B.S., University of Maryland, 1940; M.ED., 1948.
- WARREN J. BLACKMAN, *Lecturer in Economics*  
A.B., Ball State Teachers College, 1948; M.A., Edinburgh University, 1951; PH.D., 1956.
- PAUL S. BODENMAN, *Lecturer in Mathematics*  
A.B., Lakeland College, 1934.
- FRANCIS R. BODINE, *Lecturer in Mathematics*  
B.S., Pennsylvania State Teachers College, 1951.
- CHARLES S. BORSUK, *Lecturer in Business Administration (Far East)*  
PH.B., University of Wisconsin, 1947; M.B.A., 1954.
- JOHN A. BOTTOMLEY, *Lecturer in Economics (Europe)*  
B.A., University of British Columbia; M.A., University of Virginia.
- ARTHUR P. BOUVIER, *Lecturer in English (Europe)*  
B.A., University of Minnesota, 1921; PH.D., 1943.
- JOHN H. BOWEN, *Lecturer in Psychology*  
B.A., University of Arkansas, 1949; M.A., 1950; PH.D., University of Maryland, 1954.
- RAYMOND T. BOWMAN, *Lecturer in Economics*  
B.S., University of Pennsylvania, 1925; PH.D., 1933.

## Faculty

- EDMUND G. BOY, *Lecturer in Economics*  
B.S., University of Maryland, 1958; M.B.A., Babson Institute, 1958.
- VINCENT C. BRANN, *Lecturer in Speech (Europe)*  
B.A., State University of Iowa, 1950; M.A., Columbia University, 1953.
- FREDERICK BRANTLEY, *Lecturer in English*  
A.B., Louisiana State University, 1940; M.A., University of Iowa, 1942.
- PELA F. BRAUCHER, *Associate Professor of Foods and Nutrition*  
A.B., Goucher College, 1927; M.S., Pennsylvania State University, 1929.
- HENRY BRECHBILL, *Professor of Education*  
B.A., Blue Ridge College, 1911; M.A., University of Pittsburgh, 1917; PH.D., George Washington University, 1933.
- RICHARD B. BRIAN, *Instructor in Mathematics*  
B.S., Grove City College, 1953.
- FURMAN A. BRIDGERS, *Assistant Professor of Foreign Languages*  
B.A., Duke University, 1925; M.A., University of Chicago, 1928.
- SIMEON M. BRIGHT, *Lecturer in History*  
A.B., West Virginia University, 1949; M.A., 1950.
- CLARA BROGAN, *Lecturer in History*  
B.A., University of Buffalo, 1929; M.A., University of Pennsylvania, 1945.
- LILLIAN W. BROWN, *Instructor in Child Education*  
B.A., Lake Erie College, 1930.
- SAMUEL E. BROWN, *Instructor in English*  
A.B., Indiana University, 1934; M.A., 1946; PH.D., Yale University, 1955.
- RAY B. BROWNE, *Instructor in English*  
A.B., University of Alabama, 1943; M.A., Columbia University, 1947; PH.D., University of California at Los Angeles, 1956.
- RUFUS C. BROWNING, *Lecturer in Sociology*  
A.B., Illinois College, 1940; M.P.S., University of Colorado, 1949; PH.D., American University, 1955.
- WILLIAM FRENCH BRUCE, *Lecturer in Education*  
B.S., Ohio State University, 1911; M.A., 1924; PH.D., 1926.
- FRANKLIN L. BURDETTE, *Professor of Government and Politics*  
A.B., Marshall College, 1934; M.A., University of Nebraska, 1935; M.A., Princeton, 1937; PH.D., 1938.
- ELBERT M. BYRD, JR., *Instructor in Government and Politics*  
B.S., American University, 1953; M.A., 1954.
- JAMES BYRD, *Instructor in Speech and Dramatic Arts*  
B.A., University of North Carolina, 1948; M.A., 1949.



RICHARD H. BYRNE, *Professor of Education*

A.B., Franklin and Marshall College, 1938; M.A., Columbia University, 1947; ED.D., 1952.

EDWARD R. CAIN, *Lecturer in Government and Politics (Europe)*

A.B., Boston University, 1948; M.A., Columbia University, 1950; PH.D., 1952.

JOHN F. CALLAHAN, *Lecturer in Mathematics*

B.S., United States Naval Academy, 1942; M.C.E., Rensselaer Polytechnic Institute, 1948.

GEORGE H. CALLCOTT, *Instructor in History*

A.B., University of South Carolina, 1950; M.A., Columbia University, 1951; PH.D., University of North Carolina, 1956.

MARY K. CARL, *Associate Professor of Education*

B.S., Johns Hopkins University, 1946; PH.D., University of Maryland, 1951.

WILLIAM D. CARMICHAEL, *Lecturer in Economics*

B.A., Yale University, 1950; M.A., Princeton University, 1952; M.P.A., 1952.

EUGENE F. CARRAHER, *Lecturer in History*

A.B., Clark University, 1948; M.A., University of Connecticut, 1950.

IRVING J. CASEY, *Lecturer in Military Studies*

A.B., Brown University, 1942; LL.B., The George Washington University, 1954; M.A., University of Maryland, 1957.

VERNE E. CHATELAIN, *Professor of History*

B.A., Nebraska State Teachers College, 1917; M.A., University of Chicago, 1925; PH.D., University of Minnesota, 1943.

CHUNJEN C. CHEN, *Instructor in Foreign Languages*

B.S., Cornell University, 1919; M.S., University of Maryland, 1920.

YAOHAN CHU, *Lecturer in Electrical Engineering*

B.S., Chiao-Tung University, 1942; M.S., Massachusetts Institute of Technology, 1945; SC.D., 1953.

JOHN C. CLENDENIN, *Instructor in English*

B.S., Mansfield State Teachers College, 1935; M.A., Bucknell University, 1941.

ROBERT R. CLUSE, *Instructor in Business Administration*

B.B.A., University of Miami, 1951; M.A., 1952.

LOUIS A. COLON, *Lecturer in Foreign Languages*

JAMES V. COMPTON, *Lecturer in History (Europe)*

B.A., Princeton University, 1950; M.A., University of Chicago, 1952.

JAMES CONLAN, *Lecturer in Mathematics*

B.A., University of California, 1945; M.A., 1948; PH.D., 1958.

VIRGINIA CAROLYN CONLEY, *Associate Professor of Nursing Education*

B.S., University of Maryland, 1940; M.A., 1953.

## Faculty

FRANKLIN D. COOLEY, *Associate Professor of English*

A.B., Johns Hopkins University, 1927; M.A., University of Maryland, 1933; PH.D., Johns Hopkins University, 1940.

SHEROD M. COOPER, JR., *Instructor in English*

B.S., Temple University, 1951; M.A., 1953.

LESLIE C. COSTELLO, *Instructor in Zoology*

B.S., University of Maryland, 1952; M.S., 1954; PH.D., 1957.

JOHN L. COULTER, JR., *Assistant Professor of English*

B.A., American University, 1934; M.A., North Carolina University, 1936.

KENNETH L. COWAN, *Lecturer in Economics*

B.S., University of Maryland, 1958; M.B.A., Babson Institute.

JOHN P. CRAVEN, *Lecturer in Physics*

B.S., Cornell University, 1946; M.S., California Institute of Technology, 1947; PH.D., State University of Iowa, 1951; LL.B., George Washington University, 1958.

BARBARA W. CREAMER, *Instructor in Nutrition*

B.S., University of Washington, 1943.

GEORGE ROBERT CREEL, JR., *Lecturer in Public Relations*

B.S., Alabama Polytechnic Institute, 1937; M.S., University of Wisconsin, 1952.

WILLIAM J. CRIBB, JR., *Lecturer in Business Administration*

B.S., University of Maryland, 1956; M.B.A., 1957.

EDMUND D. CROSBY, *Assistant Professor of Industrial Education*

A.B., Western Michigan University, 1934; M.A., Colorado A & M, 1940.

HERBERT A. CROSMAN, *Lecturer in History (Europe)*

A.B., Harvard University, 1938; A.M., 1938; PH.D., 1948.

WALLACE W. CULVER, *Lecturer in Sociology*

B.A., N.W. Missouri State College, 1933; M.A., Pennsylvania State University, 1950; PH.D., 1951.

MARGARET T. CUSSLER, *Assistant Professor of Sociology*

B.A., New York State College of Teachers at Albany, 1933; M.A., Radcliffe College, 1941; PH.D., 1943.

JOHN A. DAIKER, *Assistant Professor of Business Organization*

B.S., University of Maryland, 1941; M.B.A., 1951.

JOHN L. DALTON, *Assistant Professor of Economics*

A.B., University of California, 1943; PH.D., 1955.

GERALD H. DAVIS, *Lecturer in History (Atlantic)*

B.A., Morris Harvey College, 1952; PH.D., Vanderbilt University, 1958.

PHILIP J. DAVIS, *Lecturer in Mathematics*

S.B., Harvard University, 1943; M.S., 1947; PH.D., 1950.

TOWNES L. DAWSON, *Associate Professor of Business Law*

B.B.A., The University of Texas, 1943; M.B.A., 1947; PH.D., 1950; LL.B., 1954.

DOROTHY F. DEACH, *Professor and Head of Physical Education—Women*

B.S., University of Illinois, 1931; M.S., 1932; PH.D., University of Michigan, 1951.

JAMES P. DEE, *Lecturer in Speech (Far East)*

A.B., University of Florida, 1948; M.A., University of Missouri, 1950; PH.D., Ohio State University, 1957.

JULES DE LAUNAY, *Lecturer in Physics*

B.A., Oxford (England), 1935; M.A., 1939; PH.D., Stanford University, 1939.

WALTER W. DESHLER, *Assistant Professor of Geography*

B.S., Lafayette College, 1943; M.A., University of Maryland, 1953; PH.D., 1957.

DONALD DEW, *Instructor in Speech*

B.A., University of Maryland, 1950; M.A., State University of Iowa, 1956.

ELLIOT A. DEWEY, *Lecturer in Mathematics*

B.S., U. S. Naval Academy, 1947; B.C.E., Rensselaer Polytechnic Institute, 1950.

CHARLES DE WITT, *Lecturer in Education*

A.B., Culver-Stockton College; M.S., Drake University, ED.D., University of Maryland.

PETER DIAMADOPOULAS, *Instructor in Philosophy*

B.A., 1952; M.A., 1956; PH.D., Harvard University, 1957.

EITEL W. DOBERT, *Assistant Professor of Foreign Languages*

B.A., University of Geneva, 1932; M.A., University of Maryland, 1949; PH.D., 1954.

ALAN L. DODD, *Lecturer in Education*

A.B., Western Maryland College, 1951; M.ED., University of Maryland, 1956.

NORMAN J. DOORENBOS, *Assistant Professor of Chemistry*

B.S., University of Michigan, 1950; M.S., 1951; PH.D., 1953.

DONALD MARQUAND DOZER, *Lecturer in History*

B.A., College of Wooster, 1927; M.A., Harvard University, 1930; PH.D., 1936.

DICK DUFFEY, *Associate Professor of Chemical Engineering*

B.S., Purdue University, 1939; M.S., University of Iowa, 1940.

GERALD H. DUIN, *Lecturer in Foreign Languages*

B.S., U. S. Military Academy, 1936.

RALPH EMERSON DUNHAM, *Lecturer in Education*

B.A., Kansas State Teachers College, 1938; M.A., 1942; ED.D., University of California at Berkeley, 1950.

BERNARD E. DUPUIS, *Lecturer in Government and Politics (Atlantic)*

B.S., University of Maryland, 1956; M.A., 1958.

ROBERT Y. DURAND, *Lecturer in Business Administration (Europe)*

A.B., Oberlin College, 1934; M.B.A., Harvard Business School, 1941.

## Faculty

FRANK A. DURGIN, *Lecturer in Economics (Europe)*

B.A., Tufts University, 1949; PH.D., Universite de Toulouse, 1956.

DAVID M. EARL, *Lecturer in Government and Politics (Far East)*

A.A., Flint Junior College, 1931; A.B., Oberlin College, 1933; M.A., Wayne University, 1950; PH.D., Columbia University, 1957.

CHARLES B. EDELSON, *Assistant Professor of Accounting*

B.B.A., University of New Mexico, 1949; M.B.A., Indiana University, 1950.

GERALD GORDON EGGERT, *Instructor in History*

B.A., Western Michigan College of Education, 1949; M.A., University of Michigan, 1951.

C. ASHLEY ELLEFSON, *Lecturer in English*

B.A., Wisconsin State College, 1952; M.A., University of Iowa, 1955.

HERMAN E. ELLINGSON, *Lecturer in Mathematics*

B.A., Luther College, 1924; M.S., State University of Iowa, 1927; PH.D., 1948.

WILLIAM P. ELLIS, *Instructor in Speech*

B.S., Towson Teachers College, 1954; M.A., Northwestern University, 1956.

MARTINUS H. ESSER, *Instructor in Mathematics*

M.S., Northwestern University, 1944; PH.D., 1946.

GAYLORD B. ESTABROOK, *Professor of Physics*

B.S., Purdue University, 1921; M.S., Ohio State University, 1922; PH.D., University of Pittsburgh, 1932.

FREDERICK EVERHARDT, C.P.A., *Lecturer in Business Administration*

B.S., Johns Hopkins University, 1934.

ROBERT D. EWEN, *Lecturer in Speech (Europe)*

A.A., Los Angeles City College, 1946; A.B., University of California at Los Angeles, 1948; M.S., University of Southern California, 1949.

MARVIN H. EYLER, *Associate Professor of Physical Education*

A.B., Houghton College, 1942; M.S., University of Illinois, 1948; PH.D., 1956.

WILLIAM F. FALLS, *Professor of Foreign Languages*

A.B., University of North Carolina, 1922; M.A., Vanderbilt University, 1928; PH.D., University of Pennsylvania, 1932.

JOSEPH CONRAD FEHR, *Assistant Professor of Military Science*

LL.B., George Washington University, 1921.

WILLIAM S. FELTON, JR., *Instructor of Sociology*

B.A., Marietta College, 1948; M.A., University of Colorado, 1951; PH.D., 1955.

E. JAMES FERGUSON, *Assistant Professor of History*

B.A., University of Washington, 1939; M.A., 1941; PH.D., University of Wisconsin, 1951.

- THERESA M. FERNANDEZ, *Instructor in Nursing Education*  
B.S., Teachers College, Columbia University, 1952; M.A., 1953.
- JOHN A. FIBIGER, *Lecturer in Mathematics*  
B.A., University of Minnesota, 1953; M.A., 1954.
- SHERWOOD M. FINE, *Lecturer in Economics*  
B.A., New York University, 1936; M.A., Columbia University, 1938; PH.D., 1943.
- HELEN L. FISK, *Lecturer in Nursing*  
B.S., New York University, 1949.
- SHERMAN K. FITZGERALD, *Assistant Professor of Sociology*  
B.A., Brigham Young University, 1948; M.A., 1949; PH.D., Cornell University, 1952.
- WILLIAM C. FLANNIGAN, *Lecturer in Military Studies*  
B.S., University of Maryland, 1953; M.A., 1956.
- ABRAHAM FLATAU, *Lecturer in Mathematics*  
B.S.A.E., Purdue University, 1947; M.A.E., New York University, 1948; M.E., Columbia University, 1950; M.A., 1951.
- ELLEN D. FOSTER, *Instructor in Nursing*  
B.S., University of Maryland, 1955; M.S., 1957.
- JOHN H. FREDERICK, *Professor and Head of Business Organization*  
B.S., University of Pennsylvania, 1918; A.M., 1925; PH.D., 1927.
- CHARLES E. FREEDEMAN, *Lecturer in History (Europe)*  
A.B., Mount Union College, 1949; A.M., Columbia University, 1954.
- MELVIN J. FRIEDMAN, *Instructor in English*  
A.B., Bard College, 1949; A.M., Columbia University, 1952; PH.D., Yale University, 1954.
- WERNER J. FRIES, *Assistant Professor of Foreign Languages*  
B.S., Johns Hopkins University, 1948; M.A., 1952; PH.D., 1953.
- M. JOSEPHINE GAINES, *Instructor in Health*  
B.S., University of California at Los Angeles, 1949; M.A., New York University, 1952.
- DWIGHT L. GENTRY, *Associate Professor of Business Organization*  
A.B., Elon College, 1941; M.B.A., Northwestern University, 1947; PH.D., University of Illinois, 1952.
- WESLEY M. GEWEHR, *Professor of History (Retired)*  
PH.B., University of Chicago, 1911; A.M., 1912; PH.D., 1922.
- HERBERT R. GILLIS, *Instructor in Speech*  
A.B., Kent State University, 1947; M.A., 1949.
- FLORENCE M. GIPE, *Professor and Dean of Nursing*  
B.S., Catholic University of America, 1937; M.S., University of Pennsylvania, 1940; ED.D., University of Maryland, 1952; R.N.



## Faculty

KURT GLASER, *Lecturer in Government and Politics (Europe)*

B.A., Harvard University, 1935; A.M., 1938; PH.D., 1941.

ROBERT G. GLASSER, *Lecturer in Physics*

A.B., and S.B., University of Chicago, 1948 and 1950; M.S., 1952; PH.D., 1954.

ALFRED GOLDBERG, *Lecturer in Military Studies*

A.B., Western Maryland College, 1938; PH.D., Johns Hopkins University, 1950.

HENRY N. GOLDSTEIN, *Lecturer in Economics*

A.B., University of North Carolina; M.A., Johns Hopkins University.

WILLIAM D. GOMBAR, *Lecturer in Speech (Europe)*

B.A., University of Scranton, 1939; M.A., Harvard University, 1950.

RICHARD C. GONZALES, *Assistant Professor of Psychology*

B.A., University of Texas, 1951; M.A., 1952; PH.D., University of Maryland, 1957.

RICHARD A. GOOD, *Associate Professor of Mathematics*

A.B., Ashland College, 1939; M.A., University of Wisconsin, 1940; PH.D., 1945.

FRANK GOODWYN, *Professor of Foreign Languages*

B.A., Texas College of Arts and Industries, 1939; M.A., 1940; PH.D., University of Texas, 1946.

WILLIAM H. GRAVELY, JR., *Associate Professor of English*

A.B., College of William and Mary, 1925; M.A., University of Virginia, 1934; PH.D., 1953.

EDITH GREER, *Lecturer in Education*

B.S., University of Nebraska, 1926; M.A., 1940; PH.D., 1946.

ALLAN G. GRUCHY, *Professor of Economics*

A.B., University of British Columbia, 1926; M.A., McGill University, 1929; PH.D., University of Virginia, 1931.

HANS K. GUNTHER, *Lecturer in History (Europe)*

B.A., University of Missouri, 1951; PH.D., Stanford University, 1954.

WILLIAM W. HAGUE, *Lecturer in Military Studies*

A.B., Washington and Jefferson College, 1916; M.A., 1920.

THOMAS W. HALL, *Instructor in Foreign Languages*

B.A., University of Maryland, 1938; M.A., Middlebury College, 1950; PH.D., University of Maryland, 1958.

TIMOTHY HALLINAN, *Lecturer in History (Europe)*

A.B., Harvard University, 1946; D.PHIL., Oxford University, 1955.

EDWARD B. HAMBLETT, JR., *Lecturer in Mathematics*

B.S., University of Missouri, 1947; S.M., Massachusetts Institute of Technology, 1957.

CHARLES HAMMOND, JR., *Lecturer in Economics (Europe)*

B.A., University of Illinois, 1949; M.A., 1954; PH.D., 1958.

- PIERRE HAN, *Lecturer in English*  
A.B., Catholic University of America, 1951; A.M., Columbia University, 1952.
- PETER V. HANFORD, *Lecturer in Psychology (Europe)*  
B.S., Pennsylvania State University, 1952; M.S., 1953; PH.D., 1958.
- R. JUSTUS HANKS, *Instructor in History*  
M.A., University of Chicago, 1949.
- JOHN P. HARDT, *Lecturer in Economics*  
B.A., University of Washington, 1945; M.A., 1948; PH.D., Columbia University, 1955.
- NORRIS G. HARING, *Lecturer in Education*  
B.A., Nebraska State Teachers College, 1948; M.A., University of Nebraska, 1950; ED.D., Syracuse University, 1956.
- SUSAN E. HARMAN, *Professor of English*  
A.B., University of Nebraska, 1917; A.M., 1918; PH.D., Johns Hopkins University, 1926.
- LEONARD H. HARRIS, *Lecturer in Mathematics*  
B.S., Polytechnic Institute of Brooklyn, 1951.
- HORACE V. HARRISON, *Assistant Professor of Government and Politics*  
B.A., Trinity University, 1932; M.A., University of Texas, 1941; PH.D., 1951.
- MARK HARRISON, *Lecturer in Physics*  
B.S., Missouri State College, 1942; PH.D., Catholic University of America, 1952.
- PAUL E. HARRISON, JR., *Associate Professor of Industrial Education*  
B.ED., Northern Illinois University, 1942; M.A., Colorado State College, 1947; PH.D., University of Maryland, 1955.
- ELLEN E. HARVEY, *Associate Professor of Physical Education*  
B.S., Teachers College, Columbia University, 1935; M.A., 1941; ED.D., University of Oregon, 1951.
- GUY B. HATHORN, *Assistant Professor of Government and Politics*  
A.B., University of Mississippi, 1940; M.A., 1942; PH.D., Duke University, 1950.
- HERBERT AARON HAUPTMAN, *Lecturer in Mathematics*  
B.S., City College of New York, 1937; M.A., Columbia University, 1939; PH.D., University of Maryland, 1955.
- MARTHA J. HAVERSTICK, *Assistant Professor of Physical Education*  
B.S., Pennsylvania State University, 1943; M.A., University of Wisconsin, 1950.
- ELLIS HAWORTH, *Lecturer in Education*  
B.A., George Washington University, 1922; M.A., 1927; PH.D., Johns Hopkins University, 1928.
- JOHN J. HEBAL, *Instructor in Government and Politics*  
PH.B., University of Wisconsin, 1947; M.A., University of Alabama, 1948.

## Faculty

- ROBERT A. HEINTZE, *Instructor in Business Organization*  
B.A., George Washington University, 1953; M.B.A., Syracuse University, 1955.
- FERDINAND HELM, JR., *Lecturer in English (Europe)*  
A.B., Union College, 1937; M.A., Indiana University, 1955.
- MARIE J. HENAULT, *Instructor in English*  
B.A., University of Washington, 1945; M.A., 1946; PH.D., University of Maryland, 1952.
- RICHARD HENDRICKS, *Associate Professor of Speech*  
A.B., Franklin College, 1937; M.A., Ohio State University, 1939; PH.D., 1956.
- CHRISTOPH HERING, *Assistant Professor of Foreign Languages*  
PH.D., University of Bonn, 1950.
- RICHARD J. HERRNSTEIN, *Lecturer in Psychology*  
B.A., City College of New York, 1952; PH.D., Harvard University, 1955.
- CHARLES M. HERZFELD, *Lecturer in Physics*  
B.E.C., Catholic University of America, 1945; PH.D., University of Chicago, 1951.
- DONALD C. HESTER, *Instructor in Government and Politics*  
B.A., Blufton College, 1943; M.A., Ohio State University, 1944.
- ROBERT A. HIGHBARGER, *Lecturer in Mathematics*  
B.S., Northwestern University, 1950; M.S., University of Iowa, 1951.
- ROBERT STANLEY HIMES, *Instructor in Business Organization*  
B.S., The American University, 1951; M.B.A., 1955.
- ROBERT K. HIRZEL, *Instructor in Sociology*  
B.A., Pennsylvania State University, 1946; M.A., 1950; PH.D., Louisiana State University, 1954.
- FRANK HOADLEY, *Instructor in English*  
B.A., George Peabody College for Teachers, 1950; M.A., 1951; PH.D., University of Oklahoma, 1955.
- HAROLD C. HOFFSOMMER, *Professor and Head of Sociology*  
B.S., Northwestern University, 1921; M.A., 1923; PH.D., Cornell University, 1929.
- WALTER V. HOHENSTEIN, *Lecturer in Government and Politics (Europe)*  
B.A., Winona State, 1950; M.A., University of Minnesota, 1951; PH.D., 1956.
- STANLEY M. HOLBERG, *Instructor in English*  
B.S., University of Buffalo, 1941; M.A., 1951.
- DAVID J. M. HOOSON, *Assistant Professor of Geography*  
B.A., Oxford University, England, 1948; M.A., 1950; B.SC. (Econ.), London University, England, 1951; PH.D., 1955.
- BILLY M. HORTON, *Lecturer in Electrical Engineering*  
B.A., University of Texas, 1941; M.S., University of Maryland, 1949.

- CAROL M. HOSFELD, *Assistant Professor of Medical and Surgical Nursing*  
 Diploma in Nursing, University of Maryland, R.N., 1950; B.S., 1952; M.S., University of Pennsylvania, 1956.
- KENNETH O. HOVET, *Professor of Education*  
 B.A., St. Olaf College, 1926; PH.D., University of Minnesota, 1950.
- CHARLES Y. HU, *Professor of Geography*  
 B.A., University of Nanking, 1930; M.S., University of California, 1936; PH.D., University of Chicago, 1941.
- JAMES A. HUMMEL, *Assistant Professor of Mathematics*  
 B.S., California Institute of Technology, 1949; M.A., Rice Institute, 1953; PH.D., 1955.
- JAMES H. HUMPHREY, *Professor of Physical Education*  
 A.B., Denison University, 1933; A.M., Western Reserve University, 1946; ED.D., Boston University, 1951.
- JULIUS L. JACKSON, *Lecturer in Physics*  
 B.A., Brooklyn College, 1945; M.A., Princeton University, 1947; PH.D., New York University, 1950.
- ECKHART A. JACOBSEN, *Associate Professor of Industrial Education*  
 Oswego State Teachers College, New York, 1937; M.S., Cornell University, 1946; PH.D., University of Connecticut, 1957.
- EDWARD F. JAMES, *Lecturer in English (Atlantic)*  
 B.A., University of Maryland, 1954; M.A., 1955.
- JOSEPH A. JAMES, *Instructor in Foreign Languages*  
 B.A., Bates College, 1925; M.A., West Virginia University, 1930; Diploma Universidad de Granada, Spain, 1934; Certificado, Centro de Estudios, Madrid, 1934.
- HAROLD M. JARRETT, *Lecturer in Mathematics*  
 B.S., West Chester State Teachers College, 1939.
- ROBERT JASTROW, *Lecturer in Physics*  
 A.B., Columbia College, 1944; A.M., 1945; PH.D., 1948.
- RODERICK H. JELLEMA, *Instructor in English*  
 B.A., Calvin College, 1951; Post Graduate Diploma in English Studies, Edinburgh University, 1954.
- RICHARD H. JENKINS, *Lecturer in Education*  
 B.S., Salisbury State Teachers College, 1939; M.E., University of Maryland, 1948.
- CARL P. N. JENSEN, *Lecturer in Military Studies*  
 B.S., University of California at Berkeley, 1934; M.S., Columbia University, 1946.
- M. CLEMENS JOHNSON, *Associate Professor of Education*  
 B.S., University of Minnesota, 1943; M.A., 1949; PH.D., 1954.
- WARREN R. JOHNSON, *Professor of Physical Education*  
 B.A., University of Denver, 1942; M.A., 1947; ED.D., Boston University, 1950.

## Faculty

MORRIS L. KALES, *Lecturer in Mathematics*

B.S., Massachusetts Institute of Technology, 1933; M.S., 1934; PH.D., Brown University, 1936.

JEROME I. KAPLAN, *Lecturer in Mathematics*

B.S., University of Michigan, 1950; PH.D., University of California, 1954.

ARTHUR E. KARINEN, *Instructor in Geography*

B.A., University of California, 1944.

LEON T. KATCHMAR, *Lecturer in Psychology*

A.B., Bucknell University, 1950; M.S., University of Maryland, 1953; PH.D., 1955.

THEODORE W. KATENKAMP, JR., *Lecturer in Education*

B.S., Maryland State Teachers College, 1946; M.ED., University of Maryland, 1950.

THOMAS C. KEEDY, JR., *Instructor in Sociology*

A.B., University of Southern California, 1948; M.S., 1951; A.M., 1955; PH.D., 1956.

DANIEL R. KIFNER, *Lecturer in Military Studies*

B.S., University of Maryland, 1955; M.A., American University, 1957.

THOMAS W. KILLOUGH, JR., *Lecturer in Speech (Atlantic)*

B.A., Henderson College, 1953; M.A., University of Arkansas, 1957.

ROBERT T. KIRKPATRICK, *Lecturer in Philosophy (Far East)*

B.A., University of Illinois, 1948; M.A., Northwestern University, 1950; PH.D., 1954.

JOSEPH M. KISSANE, *Lecturer in English (Europe)*

B.A., Duquesne University, 1952; A.M., Columbia University, 1956.

ANN LOUISE KLINGELHOFFER, *Lecturer in Nursing*

B.S., University of Pittsburgh, 1945; M.A., University of Maryland, 1950; R.N.

LORAIN G. KNUPP, *Lecturer in Education*

B.S., District of Columbia Teachers College, 1936; M.ED., University of Maryland, 1948.

WILLIAM KOREY, *Lecturer in History*

B.A., University of Chicago, 1946; M.A., Columbia University, 1948.

HENRY J. KOSTKOWSKI, *Lecturer in Physics*

PH.D., Johns Hopkins University, 1954.

F. RALPH KOTTER, *Lecturer in Electrical Engineering*

B.S., University of Utah, 1937; M.A., George Washington University, 1940; SC.D., Massachusetts Institute of Technology, 1955.

FRANK J. KOTTKE, *Lecturer in Economics*

B.A., Northwestern University, 1937; M.A., 1938; PH.D., Columbia University, 1944.

GEORGE F. KRAMER, *Assistant Professor of Physical Education*

B.S., University of Maryland, 1953; M.A., 1956.

HERMANN H. KURZWEG, *Lecturer in Aeronautical Engineering*

PH.D., University of Leipzig, Germany, 1933.



- HAROLD LARSON, *Lecturer in Government and Politics*  
B.A., Morningside College, 1927; M.A., Columbia University, 1928; PH.D., 1943.
- CHARLES NICHOLAS LEE, *Instructor in Foreign Languages*  
B.A., University of Maryland, 1955.
- LEROY L. LEE, *Assistant Professor of Business Organization*  
A.B., George Washington University, 1948; M.A., 1952.
- PATRICK LEEHEY, *Lecturer in Mathematics*  
B.S., United States Naval Academy, 1942; PH.D., Brown University, 1950.
- RICHARD C. LEHMANN, *Lecturer in Foreign Languages*  
B.S., 1956.
- PETER P. LEJINS, *Professor of Sociology*  
MAG. PHIL., University of Latvia, 1930; MAG. IURIS, 1933; PH.D., University of Chicago, 1938.
- LEO R. LEMAIRE, *Instructor in Foreign Languages*
- JOHN LEMBACH, *Associate Professor of Art*  
B.A., University of Chicago, 1934; M.A., Northwestern University, 1937; PH.D., Columbia University, 1946.
- GEORGE F. LEMMER, *Lecturer in Military Studies*  
B.S., Central Missouri State College, 1938; A.M., University of Missouri, 1941; PH.D., 1947.
- HENRY A. LEPPER, *Professor of Civil Engineering*  
B.S., George Washington University, 1936; M.S., University of Illinois; DOCTOR OF ENGINEERING, Yale University, 1947.
- CHARLES W. LESLIE, *Assistant Professor of Education*  
B.A., University of Toronto, 1930; M.A., 1933; PH.D., Harvard University, 1945.
- DAVID M. LEWIS, *Lecturer in Sociology (Far East)*  
B.A., University of Maryland, 1954; M.A., 1956.
- MARY R. LEWIS, *Lecturer in Education*  
B.A., Columbia University, 1930; M.S., 1933.
- DAVID REYNOLDS LIDE, JR., *Lecturer in Physics*  
B.S., Carnegie Institute of Technology, 1949; M.A., Harvard University, 1951; PH.D., 1952.
- LEONARD C. LIDSTROM, *Lecturer in Mathematics*  
B.E., University of Minnesota, 1951; M.S., 1955.
- JULIUS LIEBLEIN, *Lecturer in Mathematics*  
A.B., Colgate University, 1937; LL.B., Harvard University, 1940.
- GILBERT LIEBERMAN, *Lecturer in Mathematics*  
B.A., New York University, 1948; M.A., Columbia University, 1949.

## Faculty

IRVING LINKOW, *Assistant Professor of Speech*

B.A., University of Denver, 1937; M.A., 1938.

NORMAN M. G. LOCKSLEY, *Lecturer in Military Studies*

B.S., North Texas State College, 1937; M.A., University of Minnesota, 1949.

GLEN M. LONEY, *Lecturer in Speech (Europe)*

A.B., University of California at Berkeley, 1950; M.A., University of Wisconsin, 1951.

PH.D., Stanford University, 1954.

MAURICE E. LONG, *Lecturer in Aeronautical Engineering*

B.S., University of Akron, 1934; M.S., 1935.

RALPH H. LONG, JR., *Professor of Mechanical Engineering*

B.S., Tufts College, 1943; M.ENG., Yale University, 1948; D.ENG., 1952.

WILLIAM F. LONG, JR., *Lecturer in Military Studies*

B.A., Otterbein, 1941.

BLAKE M. LORING, *Lecturer in Chemical Engineering*

B.S., Massachusetts Institute of Technology, 1937; sc.D., 1940.

LEONARD LUTWACK, *Assistant Professor of English*

B.A., Wesleyan University, 1939; M.A., 1940; PH.D., Ohio State University, 1950.

EDWARD F. MCCABE, *Lecturer in Mathematics*

B.S., United States Military Academy, 1943; M.S., Harvard College, 1949.

HAROLD MC CARTHY, *Lecturer in English (Europe)*

A.B., University of Massachusetts, 1941; M.A., Harvard University, 1942; PH.D., 1950.

RICHARD J. MC DEVITT, JR., *Lecturer in Military Studies*

B.S., Villanova University, 1931.

ANNIE L. MC ELHENIE, *Assistant Professor of Sociology*

B.A., Franklin College, 1926; B.S., Hillsdale College, 1927; M.A., University of Chicago, 1941; Certificate Third Year, New York School of Social Work, Columbia University, 1951.

WILLIAM F. MCKEE, *Instructor in History*

B.A., College of Wooster, 1952; M.A., University of Wisconsin, 1954.

THEODORE H. MCNELLY, *Lecturer in Government and Politics (Far East)*

B.SC., University of Wisconsin, 1941; M.A., 1942; PH.D., Columbia University, 1952.

DONALD MALEY, *Professor and Head of Industrial Education*

B.S., State Teachers College, California, Pa., 1943; M.A., University of Maryland, 1948; PH.D., 1950.

WALTER H. MALONEY, *Assistant Professor of Business Administration*

B.S.S., Georgetown University, 1951; LL.B., 1953; LL.M., University of Michigan, 1954.

JOHN E. MANAHAN, *Lecturer in History (Atlantic)*

B.A., University of Virginia, 1939; M.A., 1946; PH.D., 1946.

- ARTHUR A. MANDEL, *Lecturer in Economics (Europe)*  
 PH.D., University of Berlin, 1932.
- JOSEPH R. MARCHES, *Instructor in Sociology*  
 B.A., University of Minnesota, 1952; M.A., University of Maryland, 1953.
- MINERVA L. MARTIN, *Lecturer in English (Europe)*  
 B.S., University of Alabama, 1931; M.A., Louisiana State University, 1937; PH.D., 1940.
- WILLIAM MARTIN, *Lecturer in Sociology*  
 A.B., Northwestern College, 1939; M.A., 1942.
- WALTER R. MARTINI, *Instructor in Speech*  
 B.F.A., 1948; M.F.A., 1950.
- BENJAMIN H. MASSEY, *Professor of Physical Education*  
 A.B., Erskine College, 1938; M.S., University of Illinois, 1947; PH.D., 1950.
- MAURICE MATLOFF, *Lecturer in History*  
 B.A., Columbia College, 1936; M.A., Harvard University, 1937; PH.D., 1956.
- WESLEY J. MATSON, *Assistant Professor of Education*  
 B.S., University of Minnesota, 1948; M.A., University of California at Berkeley, 1954.
- MARTHA J. MAXWELL, *Instructor in Psychology*  
 B.A., University of Maryland, 1946; M.A., 1948.
- L. KENTON MEALS, *Lecturer in Mathematics*  
 A.B., Gettysburg College, 1942; M.A., University of Missouri, 1947.
- WALTER S. MEASDAY, *Assistant Professor of Economics*  
 A.B., College of William and Mary, 1941.
- BRUCE L. MELVIN, *Associate Professor of Sociology*  
 B.S., University of Missouri, 1916; M.A., 1917; PH.D., 1921.
- LOUIS G. MENDEZ, *Lecturer in Foreign Languages*  
 B.S., United States Military Academy, 1940; M.A., Georgetown University, 1956.
- JOHN A. MENDIOLA, *Instructor in Speech*  
 B.A., Hiram College, 1954; M.A., Ohio State University, 1955.
- RAMON C. MERCADO, *Lecturer in Foreign Languages*  
 B.A., University of Michigan, 1933; M.A., 1934.
- GEORGE R. MERRILL, *Instructor in Industrial Education*  
 B.S., University of Maryland, 1954; M.ED., 1955.
- HORACE S. MERRILL, *Professor of History*  
 B.E., River Falls State College, 1932; PH.M., University of Wisconsin, 1933; PH.D., 1942.
- EDNA M. MERSON, *Lecturer in Education*  
 B.S., Maryland State Teachers College, 1945; M.A., University of Maryland, 1949.

## Faculty

DONALD Y. MILLER, *Lecturer in Education*

B.A., University of Iowa, 1949; M.A., 1950; ED.D., Syracuse University, 1958.

FRANCIS M. MILLER, *Associate Professor of Chemistry*

B.S., Western Kentucky State College, 1946; PH.D., Northwestern University, 1949.

PAUL R. MILLER, *Lecturer in Chemical Engineering*

B.E., Johns Hopkins University, 1951; M.S., University of Maryland, 1956.

ROZELLE J. MILLER, *Lecturer in Education*

M.A., University of Maryland, 1957.

STANLEY MILLER, *Lecturer in History (Far East)*

B.S.S., City College of New York, 1950; M.S., University of Wisconsin, 1953; PH.D., 1957.

LEONARD L. MITNICK, *Assistant Professor of Psychology*

A.B., Temple University, 1951; M.A., 1953; PH.D., University of Maryland, 1956.

DON MITTLEMAN, *Lecturer in Mathematics*

B.S., Columbia University, 1939; A.M., 1940; PH.D., 1951.

DOROTHY R. MOHR, *Professor of Physical Education*

B.S., University of Chicago, 1932; M.A., 1933; PH.D., University of Iowa, 1944.

SHAW MARION MOONEY, *Lecturer in English*

B.A., Cornell University, 1931; M.A., 1937.

GEORGE ANDREW MOORE, *Lecturer in Chemical Engineering*

B.S., Union College, 1934; M.S., Harvard University, 1935; PH.D., Princeton University, 1939.

JAMES D. MORGAN, *Lecturer in Business Administration*

B.S., University of Maryland, 1949; M.B.A., 1950.

JOHN L. MORRISON, *Lecturer in Military Studies*

B.A., Albion College, 1947; M.A., University of Missouri, 1949; PH.D., 1951.

ALBERT D. MOTT, *Assistant Professor of History*

B.A., University of Missouri, 1947; M.A., 1949; PH.D., University of California, 1956.

CHARLES D. MURPHY, *Professor and Head of English*

B.A., University of Wisconsin, 1929; M.A., Harvard University, 1930; PH.D., Cornell University, 1940.

GEORGE R. MUSAL, *Lecturer in History (Europe)*

B.A., Brigham Young University, 1955; M.A., Syracuse University, 1956; PH.D., 1958.

RAMON H. MYERS, *Lecturer in Economics*

B.A., University of Washington, 1954; M.A., 1956.

BOYD L. NELSON, *Assistant Professor of Business Administration*

B.A., University of Wisconsin, 1947; M.A., 1948; PH.D., 1952.

ROGER S. NELSON, *Lecturer in Economics*

B.A., Yankton College, 1935; PH.D., University of California, 1947.

GRACIELA P. NEMES, *Assistant Professor of Foreign Languages*

B.S., Trinity College, 1942; M.A., University of Maryland, 1949; PH.D., 1952.

CLARENCE A. NEWELL, *Professor of Education*

A.B., Hastings College, 1935; A.M., Teachers College, Columbia University, 1939; PH.D., Columbia University, 1943.

HOMER E. NEWELL, JR., *Lecturer in Mathematics*

A.B., Harvard University, 1936; A.M.T., 1937; PH.D., University of Wisconsin, 1940.

BOB R. NICHOLS, *Lecturer in Education*

B.A., Tulsa University, 1930; M.S., Oklahoma State University, 1935; PH.D., 1947.

MARY R. NORTHPROP, R.N., *Lecturer in Nursing*

B.S., Georgetown University, 1952; M.S., University of Maryland, 1958.

ANN E. NORTON, *Instructor in Foreign Languages*

A.B., Syracuse University, 1945; M.A., 1947.

HUGH S. NORTON, *Lecturer in Economics*

A.B., The George Washington University, 1947; M.A., 1948.

MAURICE E. O'DONNELL, *Assistant Professor of Government and Politics*

B.S., Eastern Illinois State College, 1948; M.S., University of Wisconsin, 1951; PH.D., 1954.

GUNNAR P. OHMAN, *Lecturer in Electrical Engineering*

B.S., Illinois Institute of Technology, 1943; M.S., University of Maryland, 1948.

LEO W. O'NEILL, JR., *Associate Professor of Education*

B.A., University of Chicago, 1938; M.A., University of Kansas City, 1952; ED.D., University of Colorado, 1955.

CHARLES R. ORR, *Lecturer in Speech (Europe)*

A.B., Muskingum College, 1928; M.A., University of Michigan, 1938.

HANSJORG OSER, *Lecturer in Mathematics*

DIPLOMA OF PHYSICS, University of Freiburg, 1954; DR. OF MATH, 1957.

PAUL D. OYER, *Lecturer in Mathematics*

B.S., Indiana University, 1948; M.A., 1949.

J. NORMAN PARMER, *Instructor in History*

B.A., Indiana University, 1949; M.A., University of Connecticut, 1951; PH.D., Cornell University, 1957.

ARTHUR S. PATRICK, *Professor in Charge of Office Techniques and Management*

B.ED., Wisconsin State College, 1931; M.A., University of Iowa, 1940; PH.D., American University, 1956.

DONALD J. PATTON, *Lecturer in Geography*

S.B., Harvard University, 1942; A.M., 1947; PH.D., 1949.



## Faculty

JUDSON B. PEARSON, *Lecturer in Sociology (Europe)*

B.A., University of Colorado, 1946; M.A., 1949; PH.D., University of Washington, 1953

ALICE L. PEET, *Instructor in Speech*

B.S., University of Wisconsin, 1944; M.A., 1952.

WILLIAM A. PENNINGTON, *Professor of Chemical Engineering*

B.S., Union University, 1925; PH.D., Iowa State College, 1933.

FREDERICK C. PEREGOY, *Lecturer in Industrial Education*

B.S., United States Naval Academy, 1945.

HUGH V. PERKINS, *Professor of Education*

B.A., Oberlin College, 1941; M.A., University of Chicago, 1946; PH.D., 1949; ED.D., New York University, 1956.

PETER ANTHONY PETITO, *Lecturer in Mathematics*

B.S., Illinois Institute of Technology, 1934.

FRANKLIN A. PHILLIPS, *Lecturer in Mathematics*

B.A., Arizona State College, 1952; M.A., University of Oklahoma, 1953.

ROBERT M. PIERSON, *Instructor in English*

B.A., De Pauw University, 1946; M.A., Duke University, 1948; PH.D., 1951; M.S.L.S., Catholic University of America, 1955.

WATSON FARLEY PINDELL, *Lecturer in Education*

B.S., Johns Hopkins University, 1928; M.A., Loyola College, 1953; ED.D., Columbia University, 1955.

ELMER PLISCHKE, *Professor and Head of Government and Politics*

PH.B., Marquette University, 1937; M.A., American University, 1938; PH.D., Clark University, 1943.

STANLEY S. PLISKOFF, *Instructor in Psychology*

B.S., New York University, 1951; M.S., 1953; PH.D., 1956.

MARK A. PLIVELIC, *Instructor in Business and Public Administration*

B.S., Duquesne University, 1951; M.LITT., University of Pittsburgh, 1956.

ROBERT G. POHRER, *Lecturer in Mathematics*

B.S., St. Louis University, 1950; M.A., Duke University, 1952; PH.D., 1954.

JOSEPH F. POLAND, *Lecturer in History (Europe)*

B.A., University of California at Los Angeles, 1952; M.A., 1955.

RICHARD D. POLL, *Lecturer in History (Europe)*

B.A., M.A., Texas Christian University, 1939; PH.D., University of California, 1948.

IRWIN POLLACK, *Lecturer in Psychology*

B.S., University of Florida, 1945; M.A., Harvard University, 1946; PH.D., 1949.

GEORGE B. H. POPE, *Lecturer in Military Studies*

PH.B., Hamilton College, 1916

JANUS POPPE, *Lecturer in Economics (Far East)*

B.S., Nautical Academy, 1939; M.A., Georgetown University, 1947; PH.D., 1948.

JOHN PORTZ, *Instructor in English*

B.A., Duke University, 1937; M.A., Harvard University, 1942.

EUGENE S. POWELL, *Lecturer in Government and Politics (Europe)*

A.B., San Diego State College, 1948; M.A., University of California, 1951.

JOSEPH E. POWELL, *Lecturer in Mathematics*

B.S., University of Colorado, 1945; M.S., Rensselaer Polytechnic Institute, 1955.

GORDON W. PRANGE, *Professor of History*

B.A., University of Iowa, 1932; M.A., 1934; PH.D., 1937.

DANIEL A. PRESCOTT, *Professor of Education*

B.S., Tufts College, 1920; M.ED., Harvard University, 1922; ED.D., 1923.

FAY B. PRICKETT, *Lecturer in Military Studies*

B.S., United States Military Academy, 1916.

JOHN R. PROBERT, *Lecturer in Government and Politics*

A.B., Lafayette College, 1937; A.M., University of Pennsylvania, 1938; PH.D., 1957.

RUDOLPH E. PUGLIESE, *Assistant Professor of Speech*

B.A., Miami University, Ohio, 1947; M.A., Catholic University, 1949.

DONALD K. PUMROY, *Assistant Professor of Psychology*

B.A., University of Iowa, 1949; M.S., University of Wisconsin, 1951; PH.D., University of Washington, 1954.

HENRY R. REED, *Professor of Electrical Engineering*

B.S., University of Minnesota, 1925; M.S., 1927; E.E., South Dakota State College, 1930; PH.D., University of Iowa, 1941; Registered Professional Engineer.

JAMES H. REID, *Professor of Marketing*

B.S., University of Iowa, 1923; M.A., American University, 1933.

HAROLD RICE, *Lecturer in Military Studies*

B.S., United States Military Academy, 1942; M.B.A., Harvard University, 1949.

OLIVER L. RICE, *Instructor in English*

B.A., Central College, 1943; M.A., Columbia University, 1949.

G. HENRY RICHERT, *Lecturer in Business Administration (Europe)*

B.ED., Illinois State Normal University, 1929; M.B.A., Northwestern University, 1937.

PATRICK W. RIDDLEBERGER, *Assistant Professor of History*

B.A., Virginia Military Institute, 1939; M.A., University of California, 1949; PH.D., 1952.

HELEN A. RIVLIN, *Assistant Professor of History*

B.A., University of Rochester, 1949; M.A., Radcliffe College, 1950; PH.D., Oxford University, 1953.

## Faculty

- BENNIE L. ROBBINS, *Lecturer in Mathematics*  
B.A., High Point College, 1954; M.E., University of North Carolina, 1957.
- RICHARD D. ROBBINS, *Lecturer in Mathematics*  
B.S., Mississippi Southern College, 1950; M.A., Johns Hopkins University, 1951.
- JACK ROBERTS, *Lecturer in Foreign Languages*
- EDWARD A. ROBINSON, *Lecturer in Economics*  
B.A., St. Mary's Seminary and University, 1944; M.A., Catholic University of America, 1948; PH.D., 1954.
- JOHN M. ROBINSON, *Assistant Professor of Philosophy*  
B.A., Middlebury College, 1945; PH.D., Cornell University, 1949.
- BERNARD G. ROSENTHAL, *Lecturer in Psychology (Europe)*  
B.S., Northwestern University, 1942; M.A., Princeton University, 1943; PH.D., 1944.
- PHILIP ROVNER, *Instructor in Foreign Languages*  
B.A., George Washington University, 1948; M.A., 1949.
- CHARLES R. ROWDYBUSH, *Lecturer in Military Studies*  
B.S., Ohio State University, 1936; M.A., American University, 1957.
- MICHAEL E. RUDDY, *Lecturer in Business Administration (Atlantic)*  
B.S., University of Maryland, 1957; M.B.A., 1958.
- FRANK L. RYAN, *Instructor in English*  
B.A., University of Michigan, 1947; M.A., Boston College, 1948.
- VIRGIL SALERA, *Lecturer in Economics*  
B.S., University of California, 1955.
- DAVID SCOTT SANDERS, JR., *Instructor in English*  
B.A., University of California at Los Angeles, 1949; M.A., 1953; PH.D., 1956.
- ANTHONY SAS, *Assistant Professor of Geography*  
B.A., University of Amsterdam, 1947; M.A., University of Washington, 1951; PH.D., Clark University, 1957.
- SAMUEL S. SASLAW, *Lecturer in Mathematics*  
B.S., Massachusetts Institute of Technology, 1933; M.S., 1934; PH.D., 1938.
- ALVIN W. SCHINDLER, *Professor of Education*  
A.B., Iowa State Teachers College, 1927; M.A., State University of Iowa, 1929; PH.D., 1934.
- WALTER E. SCHLARETZKI, *Assistant Professor of Philosophy*  
B.A., Monmouth College, 1941; M.A., University of Illinois, 1942; PH.D., Cornell University, 1948.
- JOHN F. SCHMIDT, *Instructor in Sociology*  
B.A., University of Chicago, 1941; M.A., 1946; PH.D., 1950.

- WOLFE W. SCHMOKE**, *Lecturer in History (Atlantic)*  
B.A., University of Maryland, 1957; M.A., Yale University, 1958.
- MARIE B. SCHMUCK**, *Lecturer in Education*  
B.S., Johns Hopkins University, 1948; M.ED., 1952.
- IDA G. SCHOLL**, *Lecturer in Foreign Languages*
- EARL A. SCHUCHARD**, *Lecturer in Electrical Engineering*  
B.S., University of Washington, 1933; M.S., 1934; PH.D., 1940.
- ELMER C. SCOTT**, *Lecturer in Physics*  
A.B., Washington University, 1937; M.S., Ohio State University, 1941; PH.D., University of Michigan, 1948.
- ARNOLD E. SEIGEL**, *Lecturer in Aeronautical Engineering*  
B.S., University of Maryland, 1944; M.S., Massachusetts Institute of Technology, 1947; PH.D., University of Amsterdam, 1952.
- GLADYS SELLEW**, *Professor of Nursing*  
A.B., University of Cincinnati, 1918; B.S., 1920; M.A., 1921; PH.D., Catholic University of America, 1938.
- ROBERT S. SHAFFNER**, *Lecturer in Education*  
A.B., University of Maryland, 1948; M.ED., 1952.
- HAROLD G. SHAKLEE**, *Lecturer in Mathematics*  
B.S., Oklahoma University, 1949; M.A., 1950.
- DANIEL SHANKS**, *Lecturer in Mathematics*  
B.S., University of Chicago, 1937; PH.D., University of Maryland, 1954.
- PAUL W. SHANKWEILER**, *Associate Professor of Sociology*  
PH.B., Muhlenberg, 1919; M.A., Columbia University, 1921; PH.D., University of North Carolina, 1934.
- SOLOMON SHAPIRO**, *Lecturer in Psychology*  
B.S., Maryland State Teachers College, 1942; M.A., Johns Hopkins University, 1948; PH.D., University of Maryland, 1952.
- DONALD SHELBY**, *Assistant Professor of Economics*  
B.A., University of Cincinnati, 1947; PH.D., University of California, 1955.
- IRVING A. SIRKEN**, *Lecturer in Economics*  
B.A., McGill University, 1942; M.A., 1943; PH.D., Harvard University, 1953.
- ELEANOR L. SLACUM**, *Assistant Professor of Nursing*  
DIPLOMA IN NURSING, Cambridge Maryland Hospital School of Nursing, 1928; B.S., University of Maryland, 1951.
- FRANK J. SLAMA**, *Professor of Botany*  
B.S., University of Maryland, 1928; M.S., 1930; PH.D., 1935.

## Faculty

ZAKA I. SLAWSKY, *Lecturer in Physics*

B.S., Rensselaer Polytechnic Institute, 1933; M.S., California Institute of Technology, 1935; PH.D., University of Michigan, 1938.

GAYLE S. SMITH, *Instructor in English*

B.S., Iowa State College, 1948; M.A., Cornell University, 1951.

HARRISON SMITH, *Lecturer in History (Europe)*

B.S., Georgetown University, 1939; M.A., 1942; PH.D., 1950; PH.D., Fribourg University, 1951.

SPENCER M. SMITH, JR., *Assistant Professor of Economics*

B.A., State University of Iowa, 1941; M.A., 1942; PH.D., 1948.

THOMAS E. SMUCK, *Lecturer in History (Far East)*

A.B., Chico State College, 1946; M.A., University of California at Berkeley, 1947; PH.D., 1952.

DAVID S. SPARKS, *Assistant Professor of History*

B.A., Grinnell College, 1944; M.A., University of Chicago, 1945; PH.D., 1951.

EDWIN E. SPEAKER, *Lecturer in Mathematics*

B.S., United States Naval Academy, 1950; M.S., Massachusetts Institute of Technology, 1956.

RICHARD F. SRB, *Lecturer in History (Europe)*

B.A., Oxford University, 1953; M.S., 1953.

WILLIAM E. STAHR, *Lecturer in English*

A.B., University of Maryland, 1951; A.M., 1953.

STEPHEN STAMAS, *Lecturer in Government and Politics*

A.B., Harvard University, 1953; B.PHIL., Oxford University, 1955; PH.D., Harvard University, 1957.

THEODORE C. STANDING, *Lecturer in Sociology (Europe)*

B.A., William Penn College, 1925; M.A., State University of Iowa, 1929; PH.D., 1932.

E. THOMAS STARCHER, *Instructor in Speech*

B.A., University of Southern California, 1940; M.S., University of Arkansas, 1948.

DOROTHY R. STEFFENS, *Lecturer in Education*

REUBEN G. STEINMEYER, *Professor of Government and Politics*

A.B., American University, 1929; PH.D., 1935.

FRANK STERN, *Lecturer in Physics*

B.S., Union College, 1949; PH.D., Princeton University, 1955.

GEORGE L. STEVENS, *Lecturer in English*

B.A., Loyola College, 1951; M.A., University of Maryland, 1956.

CHARLES T. STEWART, *Lecturer in Education*

M.A., University of California, 1936; PH.D., Columbia University, 1941.



- MARTHA C. STONE, *Instructor in English*  
B.S., Southeast Missouri State College, 1927; M.A., University of Missouri, 1927.
- CHARLES DALE STORY, *Lecturer in Government and Politics (Atlantic)*  
B.A., University of Oklahoma, 1950; M.A., 1952; PH.D., 1957.
- WARREN L. STRAUSBAUGH, *Associate Professor and Head of Speech*  
B.S., Wooster College, 1932; M.A., University of Iowa, 1935.
- HERBERT L. SWAN, *Lecturer in Speech (Europe)*  
PH.B., Brown University, 1928; M.A., University of Redlands, 1949.
- JACK F. SWEARMAN, *Instructor in Mechanical Engineering*  
B.S., California, S.T.C., 1951.
- HAROLD F. SYLVESTER, *Professor of Personnel Administration*  
PH.D., The Johns Hopkins University, 1938.
- MATTHEW TAYBACK, *Lecturer in Nursing*  
A.B., Harvard University, 1939; A.M., Columbia University, 1940; ss.D., Johns Hopkins School of Hygiene, 1953.
- TED TAYLOR, JR., *Instructor in Speech*  
B.L.I., Emerson College, 1954.
- VIVIAN T. THAYER, *Lecturer in Education*  
A.B., University of Wisconsin, 1922; M.A.; PH.D.
- FEODOR THEILHEIMER, *Lecturer in Mathematics*  
PH.D., University of Berlin, 1936.
- WILLIAM R. THICKSTUN, *Lecturer in Mathematics*  
B.S., University of Maryland, 1947; M.A., 1949; PH.D., 1952.
- FRED R. THOMPSON, *Associate Professor of Education*  
B.A., University of Texas, 1929; M.A., 1939; ED.D., University of Maryland, 1952.
- RAYMOND THORBERG, *Instructor in English*  
B.A., University of Alaska, 1939; M.A., University of Chicago, 1946; PH.D., Cornell University, 1954.
- JOHN LESTER TIERNEY, *Lecturer in Business and Public Administration*  
A.B., University of Minnesota, 1929; LL.B., University of Wisconsin, 1938; LL.M., George Washington University, 1956.
- WILLIAM F. TIERNEY, *Associate Professor of Industrial Education*  
B.S., Teachers College of Connecticut, 1941; M.A., Ohio State University, 1949; ED.D., University of Maryland, 1952.
- JAMES H. TIMBERLAKE, JR., *Lecturer in History (Europe)*  
B.A., Hampden-Sydney College, 1943; M.A., Harvard University, 1950; PH.D., 1955.
- HORACE M. TRENT, *Lecturer in Electrical Engineering*  
B.A., Berea College, 1928; M.A., Indiana University, 1929; PH.D., 1934.

## Faculty

- ORVAL L. ULRV, *Associate Professor of Education*  
B.S., Ohio State University, 1938; M.A., 1944; PH.D., 1953.
- JAMES R. UMPHREY, *Lecturer in Speech (Europe)*  
A.B., University of Michigan, 1952; M.A., 1954.
- JOHN N. VAN DUSEN, *Lecturer in Mathematics*  
B.S., Loyola University of Los Angeles, 1951; M.S., Oklahoma State University, 1956.
- WILLIAM VAN ROYEN, *Professor and Head of Geography*  
M.A., Rijksuniversiteit Utrecht, 1925; PH.D., Clark University, 1928.
- NELSON S. VAN VALEN, *Lecturer in History (Europe)*  
B.A., Swarthmore, 1948; M.A., Claremont Graduate School, 1951.
- JAMES A. VAN ZWOLL, *Professor of Education*  
A.B., Calvin College, 1933; M.A., University of Michigan, 1937; PH.D., 1942.
- FRANCIS A. VELTRE, *Instructor in Microbiology*  
B.S., University of Maryland, 1952; M.S., 1954.
- HAROLD J. VETTER, JR., *Lecturer in Psychology (Europe)*  
B.A., University of Buffalo, 1949; M.A., 1952; PH.D., 1955.
- MARY B. WACKWITZ, *Lecturer in Education*  
B.S., University of Maryland, 1941; M.A., Columbia University, 1953.
- WALTER W. WADA, *Lecturer in Physics*  
B.A., University of Utah, 1943; M.A., University of Michigan, 1946; PH.D., 1950.
- ROBERT S. WALDROP, *Lecturer in Psychology*  
B.A., University of Oklahoma, 1934; PH.D., University of Michigan, 1948.
- JAMES A. WALKER, *Instructor in English*  
B.A., Amherst College, 1939; M.A., Harvard University, 1941; PH.D., 1948.
- ROGER W. WALKER, *Lecturer in Economics*  
B.A., University of Miami, 1953; M.A., 1954.
- VIRGIL R. WALKER, *Lecturer in Education*  
B.S., University of Minnesota, 1928; M.A., 1933; PH.D., 1957.
- ROALD K. WANGSNESS, *Lecturer in Physics*  
B.A., University of Minnesota, 1944; PH.D., Stanford University, 1950.
- KATHRYN P. WARD, *Associate Professor of English*  
A.B., George Washington University, 1935; M.A., 1937; PH.D., 1946.
- GLENN E. WARNEKING, *Lecturer in Education*  
B.A., Nebraska Wesleyan University, 1951; M.ED., University of Nebraska, 1954.
- WILLIAM E. WATERS, JR., *Lecturer in Electrical Engineering*  
B.S., University of Kentucky, 1947; M.S., 1949.
- WILMER A. WATROUS, *Instructor in Industrial Management*  
B.S., University of California, 1940; M.A., 1946.

- LINVILL F. WATSON, *Lecturer in Sociology (Europe)*  
 A.B., University of Pennsylvania, 1939; PH.D., 1953.
- EDWARD C. WATTERS, *Lecturer in Electrical Engineering*  
 B.S., University of Notre Dame, 1943; M.S., 1946; PH.D., University of Maryland, 1954.
- FRED W. WELLBORN, *Professor of History*  
 B.A., Baker University, 1918; M.A., University of Kansas, 1923; PH.D., University of Wisconsin, 1926.
- PHIL WELSH, *Instructor in Psychology*  
 B.A., Temple University, 1950; M.A., 1951.
- NORMAN I. WENGERT, *Professor of Government and Politics*  
 B.A., University of Wisconsin, 1938; M.A., Fletcher School, 1939; LL.B., University of Wisconsin, 1942; PH.D., 1947.
- JAMES P. WESTON, *Lecturer in Mathematics*  
 B.S., Louisiana State University, 1948; M.S., 1950.
- JAMES J. WHALEN, *Lecturer in Psychology (Europe)*  
 A.B., Franklin and Marshall College, 1950; M.S., Pennsylvania State University, 1952; PH.D., 1955.
- PHILIP D. WHEATON, *Lecturer in History (Europe)*  
 A.B., Clark University, 1938; M.ED., 1946; PH.D., University of Maryland, 1955.
- J. PATRICK WHITE, *Lecturer in History (Europe)*  
 B.A., University of Michigan, 1949; M.A., 1950; PH.D., 1956.
- PAUL W. WHITNEY, *Instructor in English*  
 B.A., University of Pennsylvania, 1950; M.A., University of Maryland, 1952.
- FRANCES C. WICKHAM, *Assistant Professor of Nursing*  
 B.S., Catholic University of America, 1947; M.A., 1957.
- GLADYS A. WIGGIN, *Professor of Education*  
 B.S., University of Minnesota, 1929; M.A., 1939; PH.D., University of Maryland, 1947.
- LARMAN C. WILSON, *Lecturer in Government and Politics (Atlantic)*  
 B.A., Nebraska State College, 1952; M.A., University of Maryland, 1957.
- ROBERT E. WILSON, *Lecturer in Aeronautical Engineering*  
 B.S., Georgia Institute of Technology, 1941; M.S., 1942; PH.D., University of Texas, 1952.
- MAURICE R. WOLFE, *Lecturer in Sociology (Europe)*  
 A.B., University of California at Berkeley, 1948; M.A., 1952.
- DALE E. WOLGAMUTH, *Instructor in Speech*  
 B.A., Western Reserve University, 1954; M.A., 1955.

## Faculty

- JOHN A. WORTMAN, *Lecturer in Government and Politics (Europe)*  
B.A., Macalester College, 1951; M.A., Columbia University, 1953; PH.D., University of Minnesota, 1958.
- THEODORE WYCKOFF, *Lecturer in Government and Politics*  
B.A., University of California at Los Angeles, 1942; M.A., Princeton University, 1957; M.P.A., 1957.
- MATTHEW YARCZOWER, *Lecturer in Psychology*  
B.A., City College of New York, 1953; M.A., University of Maryland, 1955; PH.D., 1958.
- CHARLES H. YOUNG, *Lecturer in Mathematics*  
B.S., Purdue University, 1942.
- VIRGINIA H. YOUNG, *Lecturer in Education*  
A.B., Goucher College, 1928; M.ED., Johns Hopkins University, 1943.
- W. GORDON ZEEVELD, *Professor of English*  
A.B., University of Rochester, 1924; M.A., The Johns Hopkins University, 1929; PH.D., 1936.
- JANY N. ZEMBL, *Lecturer in Physics*  
A.B., Syracuse University, 1949; M.S., 1953; PH.D., 1956.
- CHECELIA M. ZITKUS, *Assistant Professor of Nursing*  
A.B., Orsuline College, 1940; DIPLOMA IN NURSING, St. Alexes School of Nursing, R.N., 1943; M.A., University of Maryland, 1954.
- ADOLF E. ZUCKER, *Professor and Head of Foreign Languages*  
A.B., University of Illinois, 1912; A.M., 1913; PH.D., University of Pennsylvania, 1917.













